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FINAL RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION COMPREHENSIVE PROJECT MANAGEMENT PLAN VOLUME I PAGE CHANGES REVISION NO 02 CNC CHARLESTON SC

7/30/1996

ENSAFE

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY
NAVAL BASE CHARLESTON
CHARLESTON, SOUTH CAROLINA
CTO-029

FINAL
COMPREHENSIVE PROJECT MANAGEMENT PLAN
RCRA FACILITY INVESTIGATION
PAGE CHANGES, REVISION NO: 02

Prepared for:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SOUTH CAROLINA

SOUTHDIV CONTRACT NUMBER: N62467-89-D-0318

Prepared by:

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MEMPHIS, TENNESSEE 38134
(901) 383-9115

July 30, 1996

Release of this document requires the prior notification of the Commanding Officer of the Naval Base Charleston, Charleston, South Carolina.

VOLUME I

EnSafe / Allen & Hoshall

a joint venture for professional services

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15 October 1996

VIA FED-X

Mr. G. Randall Thompson
Director, Division of Hazardous and Infectious Waste Management
Bureau of Solid and Hazardous Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

Re: NAVBASE Charleston RFI, Revised Comprehensive RFI Work Plan

Dear Mr. Thompson:

At the direction of the Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), EnSafe/Allen & Hoshall (E/A&H) is completing distribution of revisions 1 and 2 of the *Final Comprehensive RFI Work Plan* for Naval Base Charleston. These revisions were approved by the South Carolina Department of Health and Environmental Control on 05 September 1996.

If you have any questions or if I can be of assistance please do not hesitate to contact Mr. Tony Hunt of SOUTHNAVFACENGCOM at 803-820-5525 or call me at 884-0029.

Sincerely,
EnSafe/Allen & Hoshall
A Joint Venture in Professional Services

By: Todd Haverkost
Task Order Manager

Attachments

cc: CTO-029 Project File, 2900-07140
Matthew A. Hunt, SOUTHNAVFACENGCOM
Johnny Tapia, SCDHEC
Paul Bergstrand, SCDHEC
Doyle Brittain, USEPA

DEPARTMENT OF THE NAVY
CHARLESTON NAVAL SHIPYARD
CHARLESTON, S.C. 29408-6100

5090
Ser 106/0278

Mr. Joseph R. Franzmathes
Director, Waste Management Division
U. S. Environmental Protection Agency
Region IV
345 Courtland Street, N. E.
Atlanta, GA 30365

Re: SUBMITTAL OF THE APPROVED COMPREHENSIVE RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION WORK PLAN

Dear Mr. Franzmathes:

As approved per the correspondence from the United States Environmental Protection Agency (USEPA) Region IV dated August 9, 1994, enclosure (1) is submitted to the USEPA. If you have any questions, please contact Bill Brasel at (803) 743-5519.

Sincerely,

W. F. NOLD
Captain USN
Commander,
Charleston Naval Shipyard

Copy to:
SCDHEC (Attn: Ann Ragan)
USEPA (Attn: Doyle Brittain)
COMNAVBASE (N34)
SOUTHNAVFACENGCOM (187, Mr. Tony Hunt)
E/H&H

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY
NAVAL BASE CHARLESTON
CHARLESTON, SOUTH CAROLINA
CTO-029

REVIEW OF THE PROPOSED REVISIONS TO THE FINAL COMPREHENSIVE RCRA FACILITY INVESTIGATION (RFI) WORKPLAN RESPONSE TO REGULATORY COMMENTS

Prepared for:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SOUTH CAROLINA

SOUTHDIV CONTRACT NUMBER: N62467-89-D-0318

Prepared by:

ENSAFE/ALLEN & HOSHALL
5720 SUMMER TREES DRIVE, SUITE 8
MEMPHIS, TENNESSEE 38134
(901) 383-9115

July 30, 1996

Response To
South Carolina Department of Health and Environmental Control
Comments For The
Proposed Revisions to the Final Comprehensive RFI Workplan (Dated 12/1/95)
March 7, 1996

Comment 1:

The Department and EPA Region IV have had discussions with NAVBASE regarding the manner in which background concentrations are calculated. Currently, the Final Comprehensive RFI Work Plan includes general discussions for calculation of background concentrations. However, more thorough and specific procedures were developed and incorporated into the Zone H RFI Report. Since the procedures included in the Zone H RFI Report are more thorough, it seems appropriate to revise the Comprehensive RFI Work Plan to incorporate these procedures. Therefore, NAVBASE should propose appropriate revisions to the Comprehensive RFI Work Plan to accomplish this.

Response 1: Appendix G, submitted on December 1, 1995, contains the *Background Evaluation Technical Memorandum*. This memorandum discusses, in detail, thorough and specific procedures for calculating background concentrations. Appendix G will be resubmitted for review.

Comment 2:

In Section 4.3.4 (Soil Sample using LIF/DPT) of the proposed revisions, it is noted that "Appendix E contains information concerning the two LIF systems available for use: Rapid Optical Screen Tool (ROST) and Site Characterization Analysis Penetrometer Systems (SCAPS). However, Appendix E is not included in the proposed revisions. This appendix should be submitted for review.

Response 2: Appendix E will be incorporated into Volume III, *Final Comprehensive Baseline Risk Assessment RCRA Facility Investigation*.

Comment 3:

Section 4.6.4 (Continuous Core Sampling using Rotasonic Drilling Methods) notes that a detailed description of the Rotasonic method is provided in Section 5.6. This is incorrect. The Rotasonic drilling method is described in Section 5.5. This error should be corrected.

Response 3: Section 4.6.4 (Continuous Core Sampling using Rotasonic Drilling Methods) refers to the Rotasonic method in Section 5.6; however, this method is actually discussed in Section 5.5. The referencing section will be corrected to read "Section 5.5".

Comment 4:

It is noted in the proposed changes [see Section 4.3.3 (Soil Sample Screening using DPT) and Section 4.3.4 (Soil Sample Screening using LIF/DPT) that specific procedures for sample collection using DPT technology vary between equipment manufacturers. Thus, the Final Comprehensive RFI Work Plan includes only a general description of procedures for sample collection when using DPT. While the Department understands that specific procedures will likely vary depending upon the specific DPT equipment being used, the exact procedures for sample collection must be included either in the Comprehensive RFI Workplan, or in the Zone-specific workplans. Therefore, if DPT will be used during assessment at NAVBASE, the Zone-specific workplans should include a description of the exact sampling procedures to be used to collect samples for the particular DPT employed.

Response 4: Section 4.3.3 (Soil Sample Screening using DPT) and Section 4.3.4 (Soil Sample Screening using LIF/DPT), in Volume II, *Final Comprehension Sampling and Analysis Plan RCRA Facility Investigation,* describes the exact procedures for sample collection using DPT equipment. If the DPT sampling approach by the selected vender differs from the outlined procedures, the deviations will be outlined and submitted as an amendment to the zone-specific work plan.

RESPONSE TO
SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL
COMMENTS FOR THE
REVIEW OF THE PROPOSED REVISIONS TO THE FINAL COMPREHENSIVE RFI WORKPLAN (HUNT TO THOMPSON, 4/15/96)
MAY 9, 1996

Comment 1:
NAVBASE Charleston has proposed the use of two innovative technologies; the Rapid Optical Screen Tool (ROST) and the Site Characterization Analysis Penetrometer Systems (SCAPS). Little information was included in the previous submittal describing these technologies. Therefore, my previous memorandum on this subject (Bowers to Tapia, 3/7/96) noted that additional information on the proposed technologies should be submitted for review. In the April 13, 1996 submittal, NAVBASE Charleston provided additional information on these technologies, including two August 1995 Superfund Innovative Technology Evaluation bulletins. The Department was also provided with the report "Site Characterization at Naval Base Charleston AOC 626", dated April 1996.

The information submitted regarding the ROST and SCAPS is vague. The equipment to be used, method of operation, sampling procedures, accuracy, precision, potential interferences, quantitation limits, as well as the advantages and disadvantages of using the technologies, and any other relevant information should be included in the Comprehensive RFI Workplan. NAVBASE Charleston should refer to Appendix B (RCRA Facility Investigation (RFI) Workplan Outline), including, but not limited to Section I.B (Sampling and Analysis Plan(s) of the RCRA permit for a more complete list of issues that must be addressed.

As an example of the questions surrounding the proposed use of ROST and SCAPS, an important limitation to these technologies has been noted while reviewing the Zone L RFI Workplan, in which use of ROST and SCAPS is proposed. Specifically, ROST and SCAPS are capable of detecting only a limited suite of parameters, such as volatile organic compounds and some petroleum compounds. Thus, these technologies are apparently incapable of detecting several common suites of parameters, such as many of the inorganics listed as hazardous constituents under RCRA. This is a severe limitation and should be fully discussed in the Comprehensive RFI Workplan.

Based upon this comment, approval of the use of ROST and SCAPS for incorporation into the Comprehensive RFI Workplan for site screening and/or sampling is not recommended. If NAVBASE Charleston wishes to submit additional information addressing the concerns noted above, the Department will review this information.

Response 1:
Due to the concerns of the accuracy, precision and other limitations of the ROST and SCAPS screening systems by EPA and SCDHEC, all references regarding these screening systems have been removed from the *Comprehensive RFI Work Plan*. These corrections have been made throughout Section 4.0 of Volume II, *Final Comprehensive Sampling and Analysis Plan*.

The above comment states "(it) has been noted while reviewing the *Zone L FRI Workplan*, ...use of ROST and SCAPS is proposed". The *Zone L RFI Workplan* does not propose the use of either the ROST or SCAPS systems; however, it does propose the use of more conventional direct push technology (DPT) such as the Geoprobe to obtain soil and groundwater samples that can be analyzed by a SCDHEC certified laboratory. The *Zone D, F, and G RFI Workplan* is the only document which proposed the use of the ROST and SCAPS systems as a screening testing tool. References to the SCAPS and ROST systems are being deleted from the Zone D, F, and G as well.

ENVIRONMENTAL PROTECTION AGENCY
COMMENTS ON THE DRAFT REVISIONS
PROPOSED FOR THE COMPREHENSIVE RESOURCE CONSERVATION
RECOVERY ACT FACILITY INVESTIGATION WORK PLAN
MAY 9, 1996

Comment 1:
In several places in various documents, reference is made to reducing the number and types of analyses performed. Volume I, Pages 2-5 — 2-10 present an explanation for this procedure. EPA agrees with this concept and this section as written. However, it is important to note that before the number and types of analyses approved in a work plan are reduced, it is important for agreement to be reached between Naval Base Charleston, South Carolina Department of Health and Environmental Control (SCDHEC), and EPA. EPA recommends that, at the point where Naval Base Charleston believes a reduction in number and types of analyses is justified, agreement be reached verbally and then consummated in writing. Pending such agreement, the approved work plan must be followed. Volume I, Pages 2-5 — 2-10 need to include this agreement.

Response 1:
Volume I, *Final Comprehensive Project Management Plan*, Page 2-10 has been revised to indicate that verbal approval to reduce the number and types of samples will be obtained from SCDHEC and EPA prior to actually doing so. This action will be followed up with written correspondence. Ideally this will occur at the 60% progress meetings which have recently been included in the CAMP schedule.

Comment 2:
In several places in various documents, reference is made to the use of the Rapid Optical Screen Tool (ROST) and Site Characterization Analysis Penetrometer System (SCAPS). Volume II, Appendix E provides some information about these methods. However, based on the information which has been provided, these appear to be primarily research tools which have not been fully tested and approved by the American Society for Testing and Materials (ASTM) or EPA for field use. Pending such approval, EPA does not favor the use of these methods in the RFI at Naval Base Charleston.

Response 2:
As stated in Response 1 of the SCDHEC comments, all references to the ROST and SCAPS systems will be removed from the *Comprehensive RFI Workplan*.

Comment 3:
Volume II, Section 8.0 is closely related to EPA's Comment 2 above. Mention is made of passive soil gas sampling. Again, EPA would expect that such methods be approved by ASTM

and/or EPA before they are included in the Naval Base Charleston Comprehensive RFI Work Plan.

Response 3:
Per recent discussions between the Navy and EPA it is recognized that the passive sampling method described is to be used solely for screening to direct other sampling. The method will be retained in the work plan as a possible screening tool.

Comment 4:
Naval Base Charleston has conducted PM_{10} monitoring but that method is missing from the draft revisions proposed for the Comprehensive RFI Work Plan. If it is to be used as a part of the RFI at Naval Base Charleston, it should be included in the Comprehensive RFI Work Plan.

Response 4:
A reference to the procedures for operating a PM_{10} station has been included on Page 8-8 of Volume II, *Final Comprehensive Sampling and Analysis Plan*. In addition, the instruction and operations manual, as well as 40 CFR, Part 50, Appendix J, for the PM_{10} station has been included in Appendix E of Volume II.

Comment 5:
Volume IV, Section 8.0 is closely related to EPA's Comments 2 and 3 above. No mention is made of personnel with specialized training or experience in the design or conduct of air monitoring investigations. One of the fundamental criteria for EPA's acceptance of air monitoring data for decision-making purposes is that any air monitoring investigation must be designed and conducted by personnel with specialized training and experience in this area.

Response 5:
Volume I, Section 6.0 briefly describes key personnel involved with the project. Resumes for these personnel can be found in Appendix C of the document. The appendix has been updated to include personnel with experience in conducting air monitoring investigations.

Comment 6:
The term "Final" is used on some of the documents submitted for EPA review and comment. EPA recommends that the term "Draft" be used on all documents which are submitted to SCDHEC and EPA for review and comment but for which approval has not yet been given. Once a document has been approved, the term "Draft" should be deleted. The term "Final" is not needed.

Response 6:
As explained at the meeting held June 10, 1996 between members of the Project Team, the terminology used to identify versions of documents is linked to specific contractual language between the Navy and their contractor. Team members agreed to continue using the terminology listed above in a fashion similar to that used in the past to support the Navy's contractual terms.

COMMENTS ON REVISION TO THE
FINAL COMPREHENSIVE RCRA FACILITY INVESTIGATION WORK PLAN
DECEMBER 01, 1995

Comment 1:

On Volume I, Appendix A: "Updated list of SWMUs and AOCs," tables A-1, A-1a, A-2, and A-2a should be appropriately labeled to express the purpose of this summary, i.e. SWMUs/AOCs listed by building number or SWMU/AOC identification number. If these is the purpose of these tables then a header indicating so should be included in the tables. Tables A-1, A-1a, A-2, and A-2a should be revised accordingly.

Response 1: Each table's header description has been revised as suggested.

Comment 2:

The record of changes sent to the Department on December 01, 1995 indicates that a corrected list of Acronyms for Volume II and a revised Table of Contents for Volume III should have been submitted for revision. This is not the case, the Department has not received the referenced changes. Please submit them for review.

Response 2: The revised list of Acronyms for Volume II and a revised Table of Contents for Volume III has been included for review.

Comment 3:

On Volume III, page 1-1 states that the number of AOCs identified to date is 204. On Appendix A the number of AOCs listed adds up to 205. In addition, these page reads "...234 have been recommended for further investigation and 165 have been designated as requiring no further investigation (NFI) at this time". This statement does not concur with Appendix A. Either the data submitted on Appendix A contains some mistakes or the above mentioned statement needs to be corrected. Explain these discrepancies in the report.

Response 3: To date, a total of 400 sites have been identified: 205 AOCs and 195 SWMUs. Of these 400 total sites, 219 have been recommended for further investigation and the remaining 181 sites are designated as NFI. Page 1-1 will be corrected to reflect the actual number of AOCs.

Comment *:

In Table A-2, page A-41, AOC 648 is listed as requiring CSI. This is incorrect. According to the RFA Report, AOC 648 is listed for NFI. Table A-2 should be revised accordingly.

Response *: Page A-41 of Table A-2 indicates AOC 648 to be a CSI; however, AOC 648 should be an NFI. Pages A-41 and A-63 have been corrected to reflect this change.

ENVIRONMENTAL PROTECTION AGENCY
COMMENTS ON THE FINAL COMPREHENSIVE
RCRA FACILITY INVESTIGATION WORK PLAN

Comment 1:

Page 4-1, Section 4.0: The Laser Induced Fluorescence (LIF) analytical screening procedure must be evaluated by EPA before approval can be given. Naval Base Charleston should submit a technical description of the procedure for evaluation by EPA.

Response 1: Appendix E contains information concerning the two LIF systems available for use: Rapid Optical Screen Tool (ROST) and Site Characterization Analysis Penetrometer Systems (SCAPS). These procedures will be resubmitted for evaluation and review.

Comment 2:

Page 5-21, Section 5.5: Equipment rinse blanks must be taken of a small percentage of the plastic sleeves that the samples are extruded into.

Response 2: Table 13-1 in Volume II, *Final Comprehensive Sampling and Analysis Plan RCRA Facility Investigation*, requires that equipment rinsate blanks be taken during well construction at each site. In order to reiterate this comment, a statement has been added in Section 5.5 which references that an equipment rinsate blank must be taken of a small percentage of the plastic sleeves that the samples are extruded into.

RESPONSE TO COMMENTS
FINAL COMPREHENSIVE RFI WORK PLAN (REV. 01) JUNE 18, 1996
SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL
JULY 12, 1996

Comment 1:
It is unclear why pages 3, 4, 8, 9, and 10 of 10 were submitted. These pages are currently included in their present form in the Final Comprehensive Project Management Plan. No changes are evident on these pages.

Response 1:
As a result of the changes incorporated in the revised document, the page numbering was affected. Consequently the aforementioned pages were provided to account for the changed numbering sequence despite the fact that there were no changes to the text.

Comment 2:
The last sentence of the second paragraph found on page 2-6 states: "However, exceptions exist where adequate background delineation will allow for more accurate assessment of the relationship of the detected organics to site impacts." The meaning of this sentence is unclear. This meaning of this sentence should be clarified.

Response 2:
This comment has been addressed and the aforementioned text has been reworded in order to clarify the meaning.

Comment 3:
The last full sentence on page 2-6 states: "There are some exceptions to the rule and these are discussed in greater detail in the *Final Comprehensive Baseline Risk Assessment work Plan.*" The section(s) and page(s) of the Final Comprehensive Baseline Risk Assessment Work Plan which discuss these exceptions should be noted on this page.

Response 3:
This comment has been addressed and the aforementioned sentence has been changed to include the information as requested.

FILING INSTRUCTIONS

The following is a list of the pages in the *Final Comprehensive Work Plan, dated August 30, 1994*, that have been revised. The obsolete pages presently in your binders are listed in the column headed "Remove." New and replacement pages are listed in the column headed "Replace." Please file the enclosed cover sheets with this instruction in the Project Management Plan in front of the Table of Contents.

If you have any questions, please call 803-884-0029.

Revision Number 01:

List of Changes/Revisions	**Remove Pages**	**Replace Pages**
Volume I — Project Management Plan		
Replace acronym list.	Existing list	Revised list
Section 2.0 - Updated Section 2.0 Technical Approach.	2-1 - 2-4	2-1 - 2-4
Appendix A (SWMUs and AOCs - sites have been updated, Table A-1a and A-2a are sorted by location).	A-1 - A-64	A-1 - A-64
Appendix C - Included resumes of personnel with specialized training or experience in the design and conduct of air monitoring investigations per the request of EPA's May 9, 1996 comments.	—	Attached Sheets

List of Changes/Revisions (continued)	**Remove Pages**	**Replace Pages**
Volume II — Comprehensive Sampling and Analysis Plan		
Replace acronym list.	Existing list	Revised list
Section 1.0 - Text changes highlighted on Pages 1-2 and 1-7.	1-1 - 1-2 1-7 - 1-8	1-1 - 1-2 1-7 - 1-8
Section 1.0 - Included maps locating pre-RFI well installations.	—	1-15 - 1-18
Section 4.0 - Text changes highlighted on Page 4-1. Added Section 4.3.3 Soil Sample Screening using DPT. Continuous Core Sampling using Rotasonic Drilling Methods.	4-1 - 4-2 4-7 - 4-18	4-1 - 4-2 4-7 - 4-18
Section 5.0 - Text changes highlighted, and added Section 5.5 Rotasonic Drilling Method.	5-1 - 5-4 5-13 - 5-24	5-1 - 5-4 5-13 - 5-28
Section 6.0 - Added Section 6.1.3 Groundwater Sampling Screening Using DPT.	6-1 - 6-4 6-7 - 6-10	6-1 - 6-4 6-7 - 6-12
Section 8.0 - Text changes highlighted.	8-3 - 8-6	8-3 - 8-6
Section 12.0 - Text change highlighted on page 12-8.	12-9 - 12-10	12-9 - 12-10
Section 13.0 - Text change highlighted on Pages 13-2, and 13-8.	13-1 - 13-2 13-7 - 13-8	13-1 - 13-2 13-7 - 13-8
Section 14.0 - Text change highlighted on Pages 14-4 and 14-5.	14-3 - 14-6	14-3 - 14-6
Section 16.0 - Text change highlighted on page 16-4, 16-5, 16-19, and 16-27.	16-3 - 16-6 16-27 - 16-28	16-3 - 16-6 16-27 - 16-28
Appendix D - updated.	D-1 -D-6	D-1 - D-6

List of Changes/Revisions (continued)	Remove Pages	Replace Pages
Volume III — Comprehensive Baseline Risk Assessment Work Plan		
New front cover, spine, and front sheet.	—	—
Table of Contents - updated.	i - ii	i - ii
Section 1.0 - Text changes highlighted on page 1-1, 1-3, 1-5, and 1-9.	1-1 - 1-10	1-1 - 1-12
Section 2.0 - Text changes highlighted on pages 2-4, 2-5, 2-11, 2-12, 2-16, 2-17, 2-27 and 2-28, modified calculation on Page 2-19.	2-1 - 2-32	2-1 - 2-34
Section 3.0 - Text changes highlighted on pages 3-2, 3-6, 3-7, 3-9.	3-1 - 3-2 3-5 - 3-10	3-1 - 3-2 3-5 - 3-10
Appendix G - Added Appendix G - Background Evaluation Technical Memo.	—	Appendix G
Volume IV — Comprehensive Health and Safety Plan		
New front cover, spine, and front sheet.	—	—
Table of Contents — updated.	i - ii	i - ii
Section 2.0 - Text changes highlighted on pages 2-2 and 2-3.	2-1 - 2-4	2-1 - 2-4
Section 5.0 — Rewritten.	5-1 - 5-2	5-1 - 5-8
Section 8.0 — Updated Section 8.0, Authorized Personnel.	8-1 - 8-2	8-1 - 8-2
Section 9.0 — Updated Section 9.0, Emergency Information.	9-1 - 9-2	9-1 - 9-2

List of Changes/Revisions (continued)	Remove Pages	Replace Pages
Volume V — Comprehensive Quality Assurance Manuals		
New front cover, spine, front sheet, and table of contents	—	—
Adding AMS, Inc.	—	Book 2 of 3
Adding CompuChem	—	Book 2 of 3
Adding International Technology Corporation	—	Book 2 of 3
Adding Triangle Laboratories of RTP, Inc.	—	Book 2 of 3
Adding Lockheed Analytical Services	—	Book 2 of 3
Adding Southwest Laboratories	—	Book 2 of 3
Adding Maxwell Laboratories	—	Book 3 of 3
Adding Pace, Inc.	—	Book 3 of 3

Revision Number 02:

List of Changes/Revisions	Remove Pages	Replace Pages
Volume I — Project Management Plan		
New front cover, spine, and front sheet.	—	—
Table of Contents - updated.	i - ii	i - ii
Section 2.0 - Text additions to the second and third paragraphs on page 2-6, and first paragraph on page 2-10.	2-5 - 2-14	2-5 - 2-16
Volume II — Comprehensive Sampling and Analysis Plan		
New front cover, spine, and front sheet.	—	—
Section 8.0 - Included reference to High Volume PM_{10} Sampler on Page 8-8.	8-7 - 8-8	8-7 - 8-8
Appendix E - Remove Laser Induced Fluorescence Analytical Screening Systems - Rapid Optical Screen Tool (ROST) and Site Characterization Analysis Penetrometer System (SCAPS) and replace with Instruction and Operation Manual - High Volume PM_{10} sampler.	Appendix E	Appendix E

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Record of Changes to the Final Comprehensive RFI Work Plan Naval Base Charleston		
Volume	**Change/Revision**	**Reason for Change**
I	New front cover, spine and front sheet: Revised the date of Revision No: 01 submission.	Prevent confusion in updated modifications.
I	Replace the acronym list.	The acronym RBC was added and the acronym SWMU was corrected.
I	Page 2-1 through 2-16: Revised the section to describe the procedure for reducing analytical parameters.	Eliminate ambiguity in the plan.
I	Page 2-6: Added "PRGs" to the definition of "extent of contamination."	Provide consistency with the previously approved sampling strategy outlined in the Comprehensive Baseline Risk Assessment Work Plan.
I	Page 2-6: Reworded the last sentence of the second paragraph.	Revised to clarify the meaning of the sentence.
I	Page 2-6: Last sentence on this page revised.	Revised to include a specific reference.
I	Page 2-10: Included statement for requirement of regulatory approval prior to reduction in analytical parameters.	Prevent non-approved analytical parameter reduction.
I	Appendix A: Updated list of SWMUs and AOCs.	Present a list which consolidates all sites identified to date.
I	Appendix A: Revised headers of each table to reflect purpose of each summary.	Revision will assist reader in understanding the purpose of each table.
I	Appendix C: Included resumes of personnel with Air Monitoring Investigations expertise.	Updated professional experience of E/A&H personnel.
II	New front cover, spine and front sheet: Revised the date of Revision No: 01 submission.	Prevent confusion in updated modifications.
II	Replace the acronym list.	The acronym CNSY was added.

Record of Changes to the Final Comprehensive RFI Work Plan Naval Base Charleston		
Volume	**Change/Revision**	**Reason for Change**
II	Table of Contents: Resubmitted the entire TOC.	Updated to include deleted sections referencing Laser Induced Fluorescence (LIF).
II	Page 1-2: Introduction of Direct Push Technology (DPT) as a screening tool.	Updated the screening tools to be used for DQO Level I and II protocol.
II	Page 1-7: Included maps of pre-RFI well installations.	Figures 1-2 and 1-3 indicate locations of pre-RFI well installations for general information.
II	Section 4.0: Removed all references to LIF.	Removed as a result of SCDHEC and EPA's comments dated May 6, 1996.
II	Page 4-1: Description of the DPT equipment.	Described a technology to assist in obtaining soil and groundwater samples using DPT, as well as, identifying extent of petroleum contamination using Laser Induced Fluorescence (LIF).
II	Page 4-9 through 4-11: Description of the DPT technique.	Provided procedures for soil sample screening using DPT and LIF/DPT.
II	Page 4-20: Description of the rotasonic drilling technique.	Provide methodology for a new technique being used for the drilling of deep wells. Was not addressed in the original plan.
II	Pages 5-1 through 5-4 and 5-13 through 5-24: Description of well installations using the rotasonic method.	Provide methodology for a new technique being used for the installation of deep wells. Was not addressed in the original plan.
II	Page 5-2: Revised monitoring well designation section.	Updated the well identification system to easily determine both the investigative zone and site at which a well is located.
II	Page 5-15: Revised filter pack specifications.	Changes were made as a result of EPA's comments on the May 19, 1995 revised Comprehensive Work Plan.
II	Page 5-15: Revised tremie pipe specifications.	Changes were made as a result to EPA's comments on the May 19, 1995 revised Comprehensive RFI Work Plan.

Record of Changes to the Final Comprehensive RFI Work Plan Naval Base Charleston		
Volume	**Change/Revision**	**Reason for Change**
II	Page 5-16: Included Deep Well Installation Contingency section.	A contingency was needed in the event the installation of a monitoring well encountered the Cooper Marl.
II	Page 5-21: Description of sample collection process from rotasonic sample core.	Increase technical accuracy of the plan.
II	Pages 6-2 and 6-3: Description of groundwater sampling screening using DPT.	Provide methodology for groundwater sampling screening using DPT.
II	Pages 8-3 and 8-4: Description of soil vapor sample screening using DPT.	Provide methodology for soil vapor sample screening using DPT.
II	Page 8-8: Included reference to High Volume PM_{10} Sampler in last paragraph.	Modified as a result of SCDHEC and EPA's comments dated May 6, 1996.
II	Page 12-10: Description of DPT sample analyses.	Provide analytical parameters for DPT.
II	Pages 13-2 and 13-8: Description of DPT QA/QC objectives and data requirements.	Included DPT in QA/QC Objectives section as well as Analytical Laboratory section.
II	Pages 14-4 and 14-5: Included DPT in Section 14.2 - Data Deliverables.	Provided deliverable requirements for DPT data.
II	Pages 16-4, 16-5, 16-27: Revise key wording in the IDW management plan.	Increase technical accuracy of the plan.
II	Appendix D: Revised footnotes and added analytical methods.	Changes were made as a result of technical review comments (Turner to Akin, 15 September 1994) and addition of analytical methods to be used during the CMS.
II	Appendix E: Added new appendix with Instruction and Operation Manual for High Volume PM_{10} Sampler and CFR reference.	As a result of SCDHEC and EPA's comments dated May 6, 1996.

Record of Changes to the Final Comprehensive RFI Work Plan Naval Base Charleston		
Volume	**Change/Revision**	**Reason for Change**
III	Resubmit the entire document to accommodate the title change.	Change was made as a result of technical review comments (DuPont to Brittain, 20 July 1994)
III	Table of Contents: Resubmitted the entire TOC.	TOC had to be revised as a result of the incorporation multiple comments.
III	Page 1-1: Revised the SWMU/AOC total.	Change made to reflect the total number of SWMUs and AOCs addressed in the RFA.
III	Page 1-3: Inserted a discussion on the presence of dioxin in background samples.	Change made per review of Zone H data.
III	Pages 1-7: Provided a more descriptive outline of the sediment sampling approach.	Changes were made as a result of technical review comments (DuPont to Brittain, 20 July 1994)
III	Page 1-9, Paragraph 3: Revised wording in the sampling strategy.	The proposed revisions provide clarity to the sampling strategy previously submitted. The revisions do not change the sampling strategy as outlined in the previous submission of the document.
III	Page 1-9, Paragraph 5: Revised to clarify inclusion/exclusion of organic chemicals in the BRA.	Change was made as a result of technical review comments (DuPont to Brittain, 20 July 1994)
III	Page 2-4: Revised wording in the overall approach to the BRA.	The proposed revisions provide clarity as to how it will be determined which chemicals get carried forward into the BRA. The revision does not change the approach to the BRA as outlined in the previous submission of the document.
III	Page 2-5: Revised to indicate how exposure point concentrations will be derived.	Change was made as a result of technical review comments (Simon to Brittain, 9 September 1994)
III	Page 2-11 and 2-12: Modified exposure pathway selection assumptions.	Changed to more accurately reflect knowledge of current use of the property.

Record of Changes to the Final Comprehensive RFI Work Plan Naval Base Charleston		
Volume	**Change/Revision**	**Reason for Change**
III	Pages 2-16 and 2-17: Revised absorption factor definition.	Change was made as a result of technical review comments (Simon to Brittain, 9 September 1994)
III	Page 2-19: Replaced formulas for the PEF approach to calculate fugitive dust emissions.	Change was made as a result of technical review comments (Simon to Brittain, 9 September 1994)
III	Page 2-26, First Paragraph: Deleted reference to ARARs under toxicological information.	Change was made as a result of technical review comments (Simon to Brittain, 9 September 1994)
III	Pages 2-27 and 2-28: Added a statement to clarify use of background data to establish ground water quality.	Change was made as a result of technical review comments (Simon to Brittain, 9 September 1994)
III	Page 3-2: Added a statement regarding the types of figures to be produced during the ERA.	Change was made as a result of technical review comments (DuPont to Brittain, 20 July 1994)
III	Page 3-6: Added groundwater as a possible media to be evaluated.	Change was made as a result of technical review comments (DuPont to Brittain, 20 July 1994)
III	Page 3-7: Provided clarification that both chemical and physiochemical parameters will be used in the determination of background for ecological parameters.	Change was made as a result of technical review comments (DuPont to Brittain, 20 July 1994)
III	Page 3-7: Added the phrase "To Be Considered Values"	Change was made as a result of technical review comments (DuPont to Brittain, 20 July 1994)
III	Page 3-9: Changed the title of Section 3.4 to "Risk Characterization."	Change was made as a result of technical review comments (DuPont to Brittain, 20 July 1994)
III	Page 3-9: Provided components of the ERA process.	Change was made as a result of technical review comments (DuPont to Brittain, 20 July 1994)

Record of Changes to the Final Comprehensive RFI Work Plan Naval Base Charleston		
Volume	**Change/Revision**	**Reason for Change**
III	Appendix G: Added Background Evaluation Technical Memo.	Addition was made as a result of EPA's comments on the May 19, 1995 revised Comprehensive RFI Work Plan.
IV	Table of Contents: Resubmitted the entire TOC.	Revised to accommodate a substantial revision to Section 5.0
IV	Section 5.0: Revised to include an expanded section on poisonous snakes as a physical hazard.	Provide a more comprehensive plan.
IV	Page 8-1: Revised the Authorization Personnel list.	Provide a more accurate point of contact list.
IV	Page 9-1: Revised the Emergency Contact list.	Provide a more accurate point of contact list.
V	Quality Assurance Manuals for Pace, CompuChem, International Technology, and Southwest Laboratories were added.	Updated to include QA manuals for all laboratories currently under major subcontract to E/A&H.

Record of Changes to the Final Comprehensive RFI Work Plan Naval Base Charleston		
Volume	**Change/Revision**	**Reason for Change**
I	New front cover, spine and front sheet: Revised the date of Revision No: 02 submission.	Prevent confusion in updated modifications.
I	Page 2-10: Included statement for requirement of regulatory approval prior to reduction in analytical parameters.	Prevent non-approved analytical parameter reduction.
I	Appendix C: Included resumes of personnel with Air Monitoring Investigations expertise.	Updated professional experience of E/A&H personnel.
II	New front cover, spine and front sheet: Revised the dated of Revision No: 02 submission.	Prevent confusion in updated modifications.
II	Table of Contents: Resubmitted the entire TOC.	Updated to include deleted sections referencing Laser Induced Fluorescence (LIF).
II	Section 4.0: Removed all references to LIF.	Removed as a result of SCDHEC and EPA's comments dated May 6, 1996.
II	Page 8-8: Included reference to High Volume PM_{10} Sampler in last paragraph.	Modified as a result of SCDHEC and EPA's comments dated May 6, 1996.
II	Appendix E: Remove LIF (ROST and SCAPS) information and replace with Instruction and Operation Manual for High Volume PM_{10} Sampler and CFR reference.	Modified as a result of SCDHEC and EPA's comments dated May 6, 1996.
III	New front cover, spine and front sheet: Revised the date of Revision No: 02 submission.	Prevent confusion in updated modifications.
IV	New front cover, spine and front sheet: Revised the date of Revision No: 02 submission.	Prevent confusion in updated modifications.
V	New front cover, spine and front sheet: Revised the date of Revision No: 02 submission.	Prevent confusion in updated modifications.

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COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY
NAVAL BASE CHARLESTON
CHARLESTON, SOUTH CAROLINA
CTO-029

FINAL
COMPREHENSIVE PROJECT MANAGEMENT PLAN
RCRA FACILITY INVESTIGATION
PAGE CHANGES, REVISION NO: 02

Prepared for:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SOUTH CAROLINA

SOUTHDIV CONTRACT NUMBER: N62467-89-D-0318

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July 30, 1996

Release of this document requires the prior notification of the Commanding Officer of the Naval Base Charleston, Charleston, South Carolina.

VOLUME I

ACRONYM LIST

AOC	Area of Concern
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
BEST	Building Economic Solutions Together
BRAC	Base Realignment and Closure
CAMP	Corrective Action Management Plan
CAMU	Corrective Action Management Units
CERFA	Community Environmental Response Facilitation Act
CMS	Corrective Measures Study
CNSY	Charleston Naval Shipyard
CS	Confirmation Study
CRP	Community Relations Plan
DMP	Data Management Plan
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
E/A&H	EnSafe/Allen & Hoshall
EBS	Environmental Baseline Survey
FISC	Fleet and Industrial Supply Center
HSWA	Hazardous and Solid Waste Amendments
IRP	Installation Restoration Program
NACIP	Navy Assessment and Control of Installation Pollutants
NAVBASE	Naval Base Charleston
NISE-EAST	Naval Command Control and Ocean Surveillance Center in Service Engineering - East
NRMC	Naval Regional Medical Center
PMP	Project Management Plan
POL	Petroleum, Oils, and Lubricants
RAB	Restoration Advisory Board
RBC	USEPA Region III Risk Based Screening Concentration
RCRA	Resource Conservation and Recovery Act

ACRONYM LIST (Continued)

RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SCDHEC	South Carolina Department of Health and Environmental Control
SWMU	Solid Waste Management Unit
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
TRC	Technical Review Committee
TU	Temporary Unit
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOA	Volatile Organic Analysis

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SIGNATORY REQUIREMENT

Condition I.E. of the HSWA portion of RCRA Part B Permit (EPA SCD 170 022 560) states that "All applications, reports, or information submitted to the Regional Administrator shall be signed and certified in accordance with 40 CFR §270.11." The certification reads as follows:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Commander, Charleston Naval Shipyard

29 August 1994

Date

1.0 INTRODUCTION

Environmental investigation and remediation at Naval Base Charleston (NAVBASE) is predominated by the Resource Conservation and Recovery Act (RCRA)/Hazardous and Solid Waste Amendments (HSWA) and by the Base Realignment and Closure (BRAC) Act. Even though the permittee, Charleston Naval Shipyard, only owns discrete parcels of land within the contiguous property identified as Naval Base Charleston, the RCRA Facility Investigation (RFI) scope includes the entire NAVBASE. Therefore, the ensuing discussions in this Project Management Plan (PMP) and the remainder of the RFI Work Plan will refer to the facility as NAVBASE with the exception of Sections 1.2 and 1.4 of the PMP which explain land usage and the issuance of the RCRA permit.

This PMP for the RFI to be conducted at NAVBASE describes the planning documents required by Condition II.C.4 and Appendix B of the HSWA portion of the RCRA Part B Permit (EPA SCD 170 022 560) and discusses overall investigative strategy.

Compliance with the RCRA Permit is regulated by both South Carolina Department of Health and Environmental Control (SCDHEC) and the US Environmental Protection Agency (USEPA). SCDHEC regulates the pre-HSWA elements of the permit under delegated authority and USEPA regulates the HSWA elements of the permit.

1.1 Site History and Location

NAVBASE Charleston was established in 1901 with a primary mission to repair, overhaul, refuel, convert, and modernize ships, and to provide logistic services in support of fleet readiness. In 1933, NAVBASE was designated as a new construction yard. During World War II, shipyard activity included ship repair, conversion, and construction. After World War II, ship construction was discontinued, but ships continued to be converted, altered, and repaired. In 1948, NAVBASE was designated as a submarine repair and overhaul center. In 1961, it was given the responsibility to overhaul and modernize nuclear submarines.

NAVBASE is located on various contiguous and discontiguous properties in Charleston and Berkeley counties on South Carolina's central coast (Figure 1-1). The base is located on both the east and west banks of the Cooper River, approximately five miles north of downtown Charleston (Figure 1-2).

1.2 Land Use

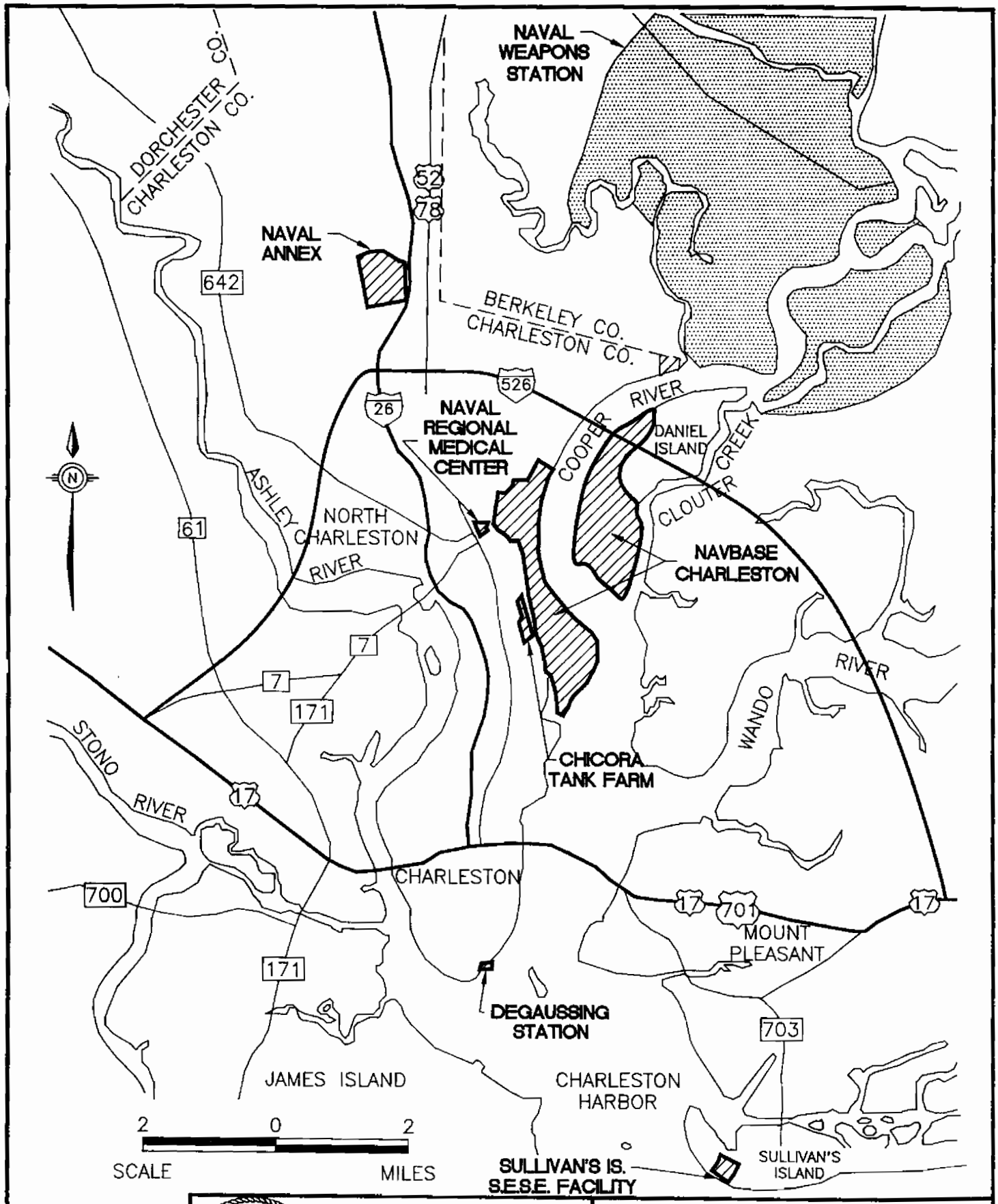
The areas surrounding NAVBASE are "mature urban", having long been developed with commercial, industrial, and residential land uses. Commercial areas are located primarily west of NAVBASE; industrial areas lie primarily to the north of NAVBASE and along the west bank of Shipyard Creek.

The area west of Shipyard Creek is concentrated with heavy industry, and has been for many years. Railways have served the area since the early 1900s. This, when combined with nearby waterways, has made the area ideal for heavy industry. While ownership has changed from time to time, the land adjacent to NAVBASE remains dedicated to chemical, fertilizer, oil refining, metallurgy, and lumber operations.

In contrast, the east bank of the Cooper River is undeveloped and contains extensive wetlands, particularly along Clouter Creek and Thomas Island. Active dredge spoil disposal areas are located on Naval property between the Cooper River and Clouter Creek. Active dredge spoil disposal areas also are located on the southern portion of Daniel Island and on Drum Island.

NAVBASE covers approximately 2,985 acres. Navy commands maintaining real property on the base include:

1)	Charleston Naval Shipyard (CNSY)	
	a. Controlled Industrial Area	120.84 acres
	b. Spoil Area East of Cooper River	1,397.00 acres
2)	Commander Naval Base	1,467.80 acres
	TOTAL ACREAGE	**2,985.64 acres**



FINAL RFI PMP
NAVAL BASE CHARLESTON
CHARLESTON, S.C.

FIGURE 1-1
LOCATION MAP

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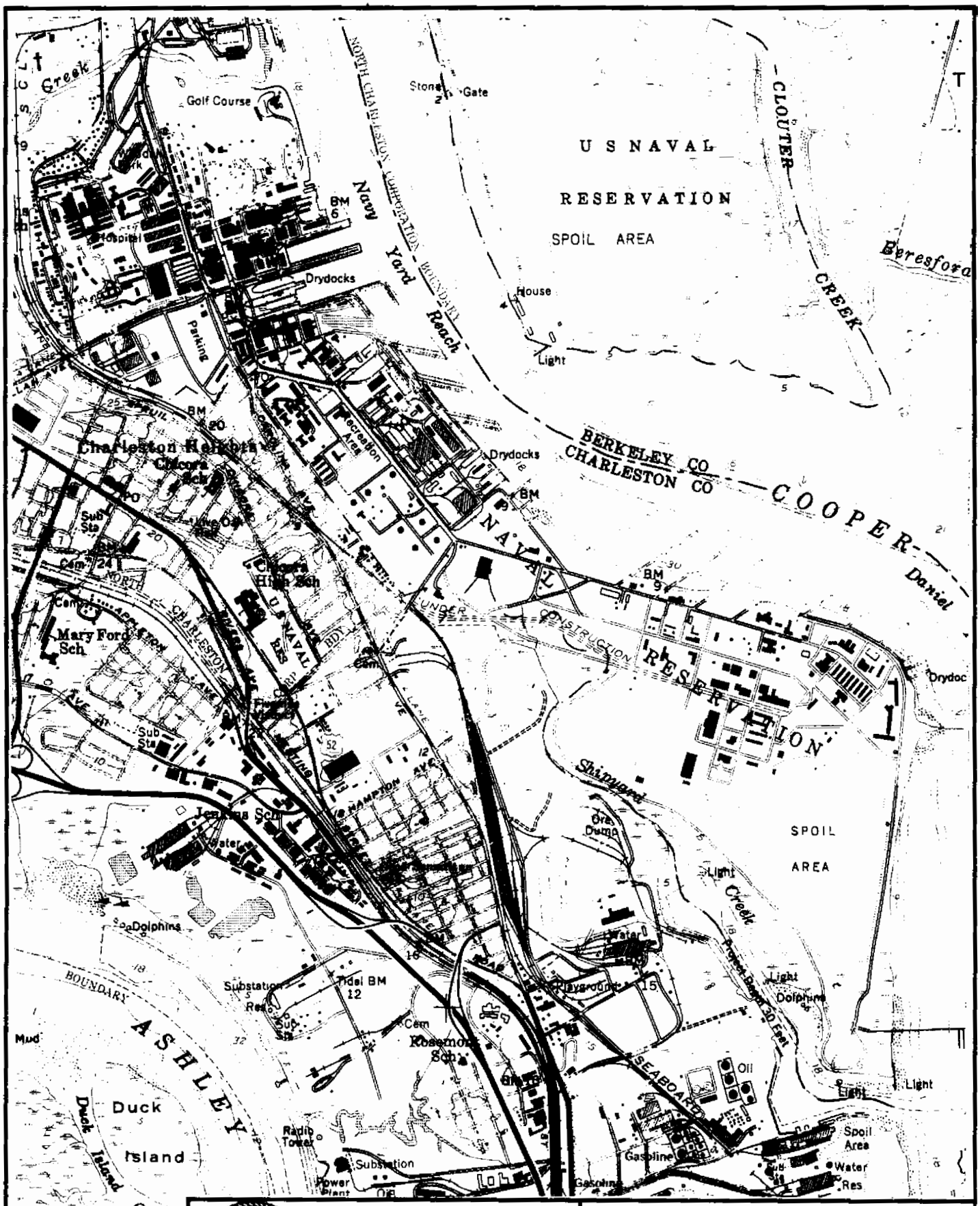

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NAVAL BASE CHARLESTON
CHARLESTON, S.C.

FIGURE 1-2
VICINITY MAP

DWG DATE: 08/08/94 | DWG NAME: BOARD

Major commands that occupy areas of the base include Fleet Ballistic Missile Submarine Training Center, Fleet and Industrial Supply Center (FISC), Fleet and Mine Warfare Training Center, Naval Regional Medical Center (NRMC), and Naval Station.

The locations of these land holdings and occupants are shown in Figure 1-3. CNSY controls the spoil area to the east of the Cooper River and the majority of the central one-third of the developed area on the west bank of the river. There are no current plans to excess the spoils area east of the Cooper River or the NRMC. The southern third of the main part of the base is controlled primarily by the Naval Station. FISC and the Naval Station are the major landholders on the northern third of the developed area. FISC also controls the Chicora Tank Farm adjacent installations's western boundary.

1.3 Installation Restoration Program

The Department of Defense (DOD) Installation Restoration Program (IRP) was developed to satisfy requirements for DOD units under the Superfund program, authorized by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. Under the IRP, the Department of the Navy created the Navy Assessment and Control of Installation Pollutants (NACIP) program to identify, assess, and control environmental contamination from past use and disposal of chemicals and other materials. Per the NACIP program, an Initial Assessment Study (IAS) and Confirmation Study (CS) were completed and submitted to the SCDHEC in 1983.

1.4 Regulatory History

RCRA/HSWA

Following the NACIP activities, a RCRA Facility Assessment (RFA) was completed in August 1987 to meet the requirements of HSWA. The RFA is designed to evaluate releases of hazardous waste or hazardous constituents to the environment and to implement corrective actions, as necessary, under HSWA. The RFA identifies information on Solid Waste

Management Units (SWMU) and areas of concern (AOC) at RCRA facilities, evaluates the potential for release to the environment, and determines the need for further investigation.

For purposes of the RFA/RFI process, the USEPA Region IV has defined SWMUs and AOCs as follows:

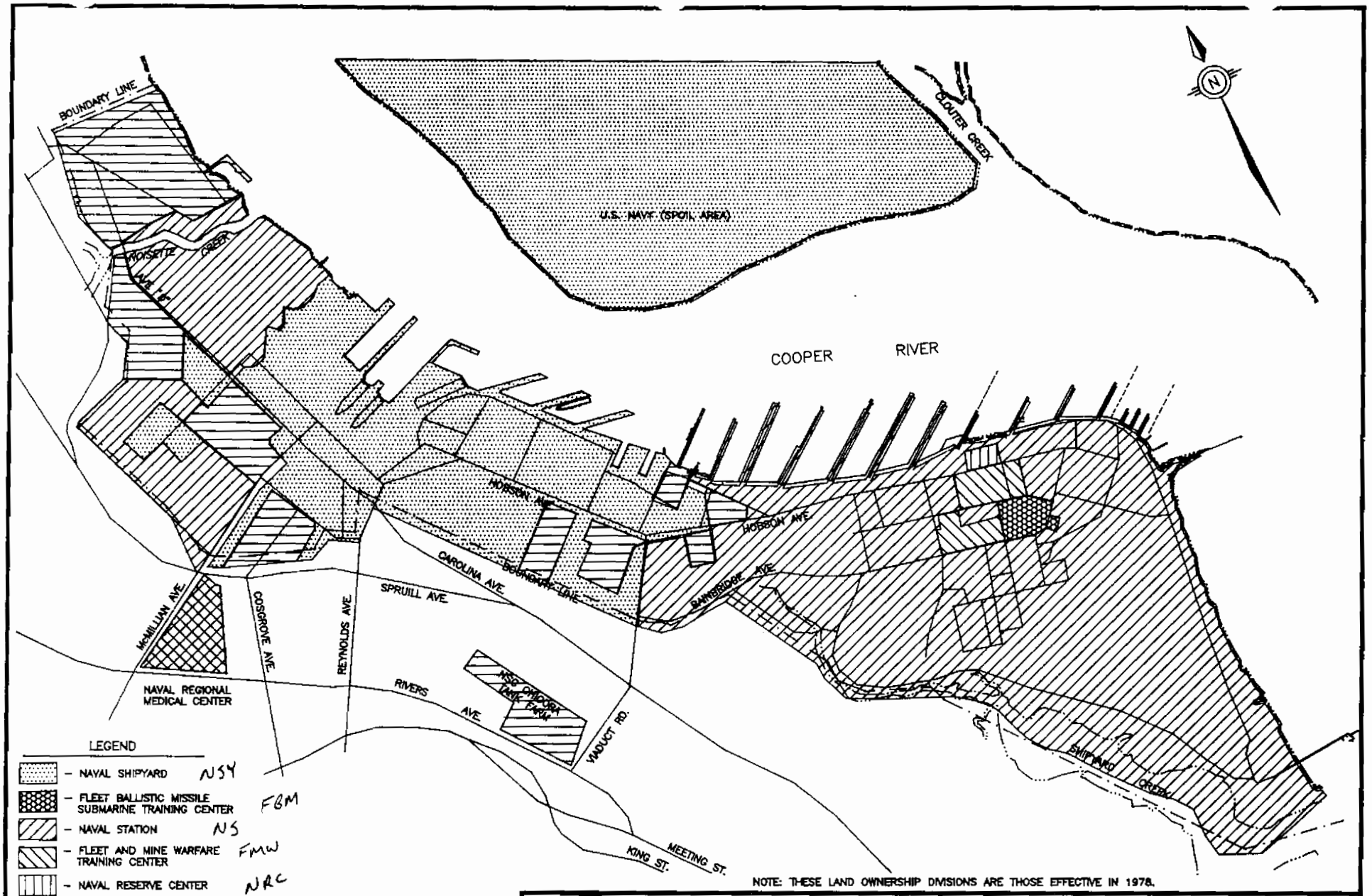
- **SWMU** — "Any unit which has been used for the treatment, storage, or disposal of solid waste at any time, irrespective of whether the unit is or ever was intended for the management of solid waste. RCRA-regulated hazardous waste management units are also solid waste management units. SWMUs include areas that have been contaminated by routine and systematic releases of hazardous constituents, excluding one-time accidental spills that are immediately remediated and cannot be linked to solid waste management activities (e.g., product or process spills)."

- **AOC** — "Any area having a probable release of a hazardous waste or hazardous constituent which is not from a solid waste management unit and is determined by the Regional Administrator to pose a current or potential threat to human health or the environment. Such areas of concern may require investigations and remedial actions as required under Section 3005(c)(3) of the Resource Conservation and Recovery Act and 40 CFR §270.32(b)(2) in order to ensure adequate protection of human health and the environment."

On May 4, 1990, the Commander, CNSY was issued a RCRA Permit for the storage of hazardous wastes. Conditions of the permit include identifying SWMUs and AOCs, conducting RFAs and RFIs, and performing necessary corrective measures.

BRAC

Transfer of federal property to non-federal parties is governed by the Community Environmental Response Facilitation Act (CERFA), which requires that deeds for federal transfer of previously



FINAL RFI PMP
NAVAL BASE CHARLESTON
CHARLESTON, S.C.

FIGURE 1–3
LOCATIONS OF
LAND OCCUPANTS

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contaminated property contain a covenant that all remedial actions necessary to protect human health and the environment have been taken. The environmental investigation and restoration of NAVBASE land parcels is governed by the BRAC Cleanup Team (BCT). The role of the BCT is described further in Section 6.

The major outcomes of BRAC impact on the RFI at NAVBASE include:

- Identifying a large number of AOCs/SWMUs through the environmental baseline survey (EBS);
- Identifying a schedule for completing all investigations within the overall base closure schedule; and
- Establishing discrete investigation zones within the activity, consistent with ultimate plans for investigation and environmental restoration.

1.5 Inventory of SWMUs and AOCs

The SWMUs and AOCs identified at NAVBASE are presented in Appendix A. To date 142 SWMUs and 196 AOCs have been designated by the USEPA. This list of sites is subject to increase if additional sites are identified during the course of the RFI. Presently, RFAs have either been written or are in the process of being written for all the sites listed. The tables also include proposed recommended actions for each SWMU and AOC based information obtained during the RFAs and EBS.

- Appendix A-1 presents all SWMUs.
- Appendix A-2 presents all AOCs.

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2.0 TECHNICAL APPROACH

This section outlines a general overview of the technical requirements of the RCRA corrective action process which begins with the RFA and proceeds through corrective measures if necessary. Figure 2-1 summarizes sequence of events and illustrates how various stages of the process are interrelated.

RFA

The RFA focuses primarily on collecting all available data to ascertain the current status of a site and deciding on an appropriate course of action for the site. Based on the available information, three possible investigative designations for each SWMU and AOC, as discussed in the RFA.

- NFI — No Further Investigation at this time. There is no reason (i.e. visual, documentation, etc.) to suspect that a release has ever occurred. These sites will not be mentioned in the zone specific work plans.
- RFI — A RFI will be performed if historical information suggests that an event(s) capable of environmental impact occurred, analytical data from past investigations indicates the presence of contamination, or if additional work is considered necessary to determine a more accurate assessment of impacts. If a SWMU/AOC is within the boundaries of another SWMU/AOC considered for an RFI, it will be incorporated into the RFI of the larger site.
- CSI — A confirmatory sampling investigation (CSI) will be performed in there is evidence of past releases, potential migration pathways, or a lack of a thorough assessment of the hazards associated with SWMU/AOC. Even if there is no evidence of a release, a CSI may be recommended due to the migration potential or design features of the SWMU/AOC. Generally, information resulting from a CSI will support the redesignation of the

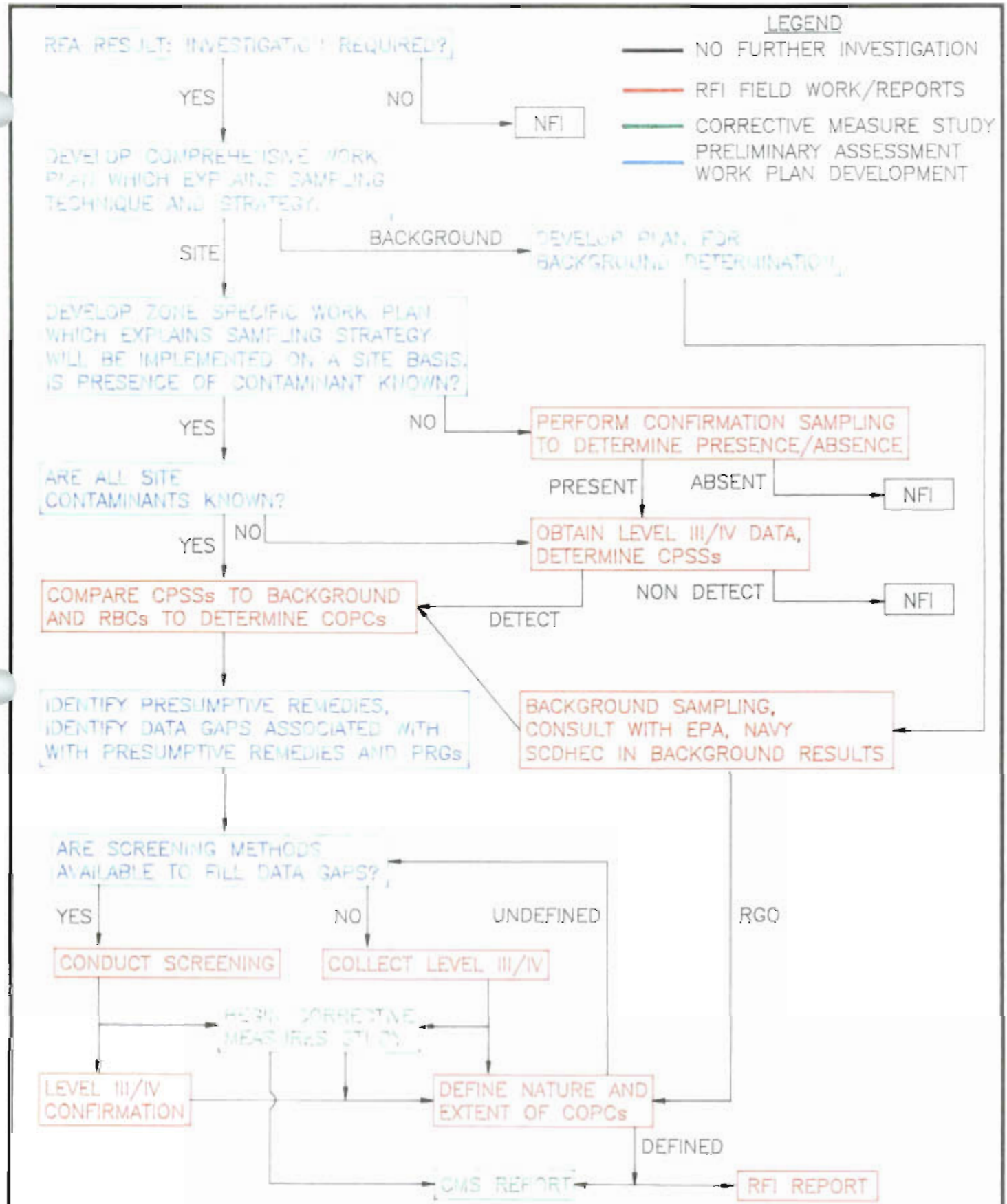
investigative approach of an AOC or SWMU as a RFI or NFI. Work Plan Development.

The identification of sites requiring further investigation necessitates the development of work plans to govern the conduct of the data collection and evaluation efforts. Specifically for the NAVBASE RFI, a Comprehensive and Zone Specific RFI Work Plans are being developed. The purposes and general content of each is discussed below.

Comprehensive Work Plan

The RFI Work Plan which was developed before the notification of new SWMUs and AOCs in August 1993 and the announcement of base closure, was technically inadequate to guide the investigation of a large number of sites. The identification of additional sites necessitated a complete reevaluation of the approach to the RFI Work Plan. To achieve consensus with USEPA and SCDHEC regarding the investigative activities throughout NAVBASE, a comprehensive RFI Work Plan is proposed that will govern all such activities, regardless of the specific zone or site under investigation at any time. The Comprehensive Work Plan contains these elements:

- Project Management Plan — to identify the technical approach, project management team and schedule.
- Sampling and Analysis Plan — to specify sample collection, analysis protocols, field and laboratory quality assurance. Subcontract laboratory quality assurance manuals will be submitted as part of the plan for USEPA's approval.
- Data Management Plan — to establish the guidelines for creating a data record and presenting conclusions of the investigation.
- Baseline Risk Assessment Plan — to address the human health and environmental risks associated with specific NAVBASE sites/zones. This plan also includes the proposes method to determine a measure of concentration for chemicals of potential concern (COPCs).



FINAL RFI PMP
NAVAL BASE CHARLESTON
CHARLESTON, S.C.

FIGURE 2-1
CORRECTIVE ACTION
FLOW CHART

DWG DATE: 2/7/96 | DWG NAME: FLOWCHT

- Health and Safety Plan — to specify health and safety requirement for all investigative activities.

Zone-specific Work Plans

To effectively coordinate the conduct of the RFIs, while prioritizing those investigations as determined by the BCT, NAVBASE has been subdivided into discrete zones for investigation and potential transfer to nonfederal entities. Figure 2-2 illustrates the boundary of the zones. Appendix B contains enlarged versions of the zone maps which also include SWMU/AOC locations. Zone-specific work plans will identify the sites within each respective zone, provide a summary of historical information, identify presumptive remedies, data gaps, and outline the sampling plan (e.g., number and location of soil borings, monitoring wells, soil-gas detection points, air monitoring stations). The identification of these elements of the plan will essentially define the objectives of the investigation. The ultimate goal of the investigation is to determine nature and extent of contamination, assess risks posed to human health and the environment, and collect appropriate data to support a corrective measures study. The process of collecting data to meet the objectives may be an iterative loop as illustrated in Figure 2-1. The development of an investigative strategy for a given zone will consider investigative activities in adjacent zones to ensure data collection efforts along zone boundaries are complementary and not duplicative. Additionally, ongoing efforts of other regulatory programs such as underground storage tanks (UST) will be evaluated to use available data and once again avoid duplication.

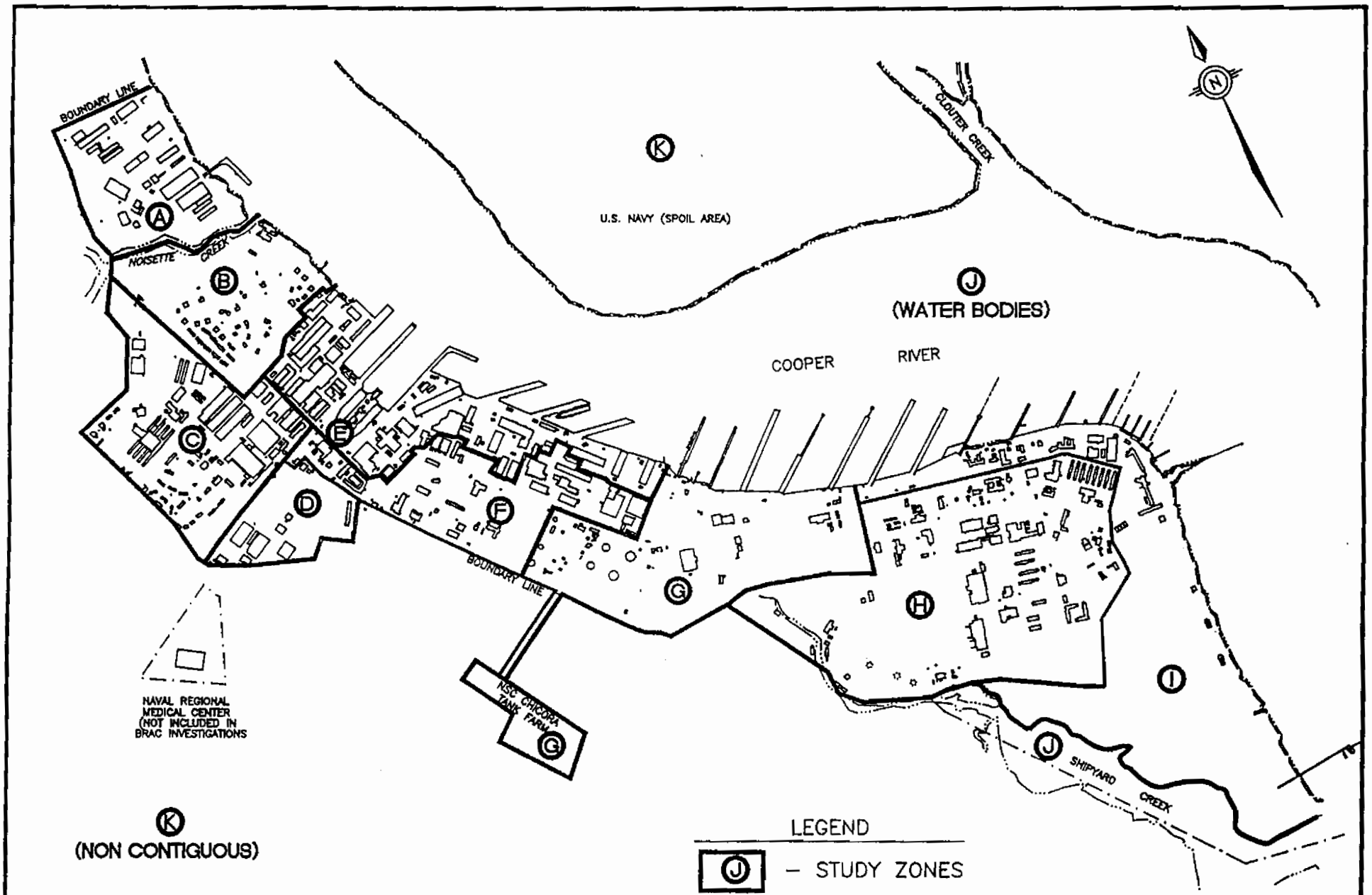
Data Collection and Evaluation

The investigation will focus primarily on the collection of chemical and physical data necessary to achieve the goals stated above. The data collection process is designed to promote gathering of information with an end use in mind similar to the concept outlined by the USEPA Data Quality Objective (DQO) process. The data collection and evaluation process will be implemented as follows.

Typically, a minimal number of highly biased samples are collected and analyzed following DQO Level III and IV protocols and procedures. Sampling locations and monitoring parameters will be selected following the rationale presented in the Section 3.0 of the RCRA Facility Investigation Guidance document (OSWER Directive 9502.00-6C). As stated in the guidance, information typically considered when developing a site-specific monitoring program includes the phase of the investigation (e.g. CSI, RFI), medium to be investigated, verifiable historical information, degree of waste characterization through sampling and analysis, extent of the release, constituent concentration within contaminated media, and potential degradation products. In the absence of all or part of the information listed above, the biased samples will likely be analyzed for a broad spectrum of compounds to minimize the possibility of overlooking any contaminants which may be of concern. If the investigation is conducted in phases, each phase will build upon the findings of the previous phase.

The initial step in the data evaluation process will be to compile a list of chemicals present in site samples (CPSSs). Compounds detected, excluding those compounds which are determined to be lab artifacts or present as a result of cross contamination, in the samples will be identified as CPSSs. Because most organic compounds are not naturally occurring, the generic assumption is made that concentrations above detection are present as a result of site impacts absent additional information to the contrary. However, exceptions may be found where the background evaluation indicates that the organics detected are ubiquitous in nature across a zone or the facility itself, rather than site specific.

The next step in the process involves further refinement of the CPSS list to identify the chemicals of potential concern. This is accomplished by comparing CPSSs to background concentrations and the USEPA Region III Risk Based Screening Concentrations (RBCs). Generally, any of the CPSSs which exceed both the background and RBC thresholds are listed as COPCs. There are some exceptions to the rule and these are discussed in greater detail in


BOUNDARY LINE
A
NOISETTE CREEK
B
C
D
E
F
BOUNDARY LINE
G
NAVAL REGIONAL MEDICAL CENTER (NOT INCLUDED IN BRAC INVESTIGATIONS
NSC CHICORA FARM
TANK
G
K
U.S. NAVY (SPOIL AREA)
CLOUTER CREEK
J
(WATER BODIES)
COOPER RIVER
H
I
J
SHIPYARD CREEK
N
K
(NON CONTIGUOUS)
LEGEND
J – STUDY ZONES
2000 0 2000
SCALE FEET
SOURCES: SOUTHDIV, n.d. ESE, 1981.
SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND
FINAL RFI PMP
ZONE H WORKPLAN
NAVAL BASE CHARLESTON
CHARLESTON, S.C.
FIGURE 2-2
ZONE BOUNDARIES
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Section 2.2.1 (pages 2-4 and 2-5) of the *Final Comprehensive Baseline Risk Assessment Work Plan*. The list of COPCs representsthe compounds which are carried forward into the baseline risk assessment for an in depth evaluation to determine the relative significance of the concentrations present with respect to human health and the environment.

Sampling endpoints are defined by establishing preliminary remediation goals (PRGs) for the COPCs found at each investigational unit. At this point of the investigation, the PRGs will be designed to provide a slightly over conservative estimate of cleanup levels to ensure enough data is collected to define the extent of contamination to levels protective of the most sensitive populations. Therefore, for purposes of the RFI, the extent of contamination is defined as the horizontal and vertical area in which the concentrations of COPCs in the environmental media being investigated are above PRGs or background concentrations indicative of the region, whichever is appropriate. If the initial sampling efforts are inadequate to define the extent of contamination, sampling will continue. The results of the initial phase investigation, as well as field data and/or observations generated during a second phase of the investigation, will be utilized to adjust and/or redirect the Phase II efforts. Adjustments to the Phase II scope of work may include: 1) reduction in the suite of analytical parameters to address only methods which are applicable to COPCs with the exception of compounds detected in groundwater. Groundwater parameters will be selected on the basis of CPSSs due to potentially low action levels and the potential for enhanced mobility of contaminants. Remedial actions will be dependent upon the identification and quantification of COPCs. If a compound is absent, or even present at concentrations too low to cause it to be identified as a COPC, little or no added benefit to the investigation will be gained by continued analysis for the compound with the exception of groundwater. The conditions for reducing analytes are discussed in the following paragraph; 2) sampling of additional media which are not already included in this work plan; 3) installation of additional monitoring wells; and 4) use of applicable field screening methods to expeditously and cost effectively delineate contaminant boundaries. If screening methods are used, a percentage of high quality confirmation samples will still be collected to verify the

screening results. If no COPCs are identified during the investigation then no further investigation may be required of that site.

Consideration for the reduction of analytical parameters during subsequent phases of sampling, inclusive of quarterly groundwater monitoring events, will be evaluated on a site-specific basis. It shall be noted that verbal approval must be obtained from EPA and SCDHEC prior to implementation of the reduction of analytical parameters. Once verbal approval has been issued, documentation will be submitted to EPA and SCDHEC outlining the approved action. Conditions under which the analytical parameters may be reduced will include but may not be limited to:

- The data used to make such decisions must be verifiable such as DQO Level III or IV analytical results.

- Analytical method detection limits were sufficiently low enough to identify COPCs if present.

- Results of the initial sampling efforts indicate with a high degree of probability that the "worst case" conditions have been defined and the chances of overlooking additional COPCs are very minimal.

- Fate and transport properties of the contaminants are carefully evaluated to ensure potential degradation products are not overlooked.

Methods which are not detailed in the current CSAP for the sampling and analysis of additional site media will be prepared and submitted for regulatory agency approval if necessary. However, sampling and/or analysis will not be performed on media for which the associated procedures are not described in the approved Comprehensive RFI Work Plan. Furthermore,

additional data from other site investigations may become available prior to or during the completion of Phase II activities at this site. This could warrant a change in the scope of work proposed in this work plan.

Baseline Risk Assessment and Background

Determination of background concentrations will proceed in parallel with the site specific investigations. Methodology and rational for background determination is discussed in greater detail in the Comprehensive RFI Work Plan, Volume III. Briefly, a variable grid-based sampling scheme will be used to determine sampling locations. Locations that are sufficiently far away from any SWMU or AOC, to be agreed upon by consensus, will be used to estimate mean background level. If sufficient precision in this estimate cannot be achieved using these samples, supplemental tools, as outlined in the Baseline Risk Assessment (BRA), will be used to determine origins of environmental media onsite to facilitate the identification of comparable sampling sites offsite. Once a consensus decision regarding finalized background levels has been reached, they will be used to identify PRGs as mentioned above. These will be fed back into the site specific data collection process to assist in determination of endpoints for the RFI and CMS.

PRGs will help identify sampling endpoints, and their calculation will include information from initial analytical results, estimated background levels, historical data from the RFA, and any other pertinent data evaluated on the basis of estimated human health and ecological impacts. The EPA recommended residential scenario will be used as the default for establishing the PRGs. Later risk management decisions will consider all available scenarios. The estimated risk/hazard projected for each chemical of potential concern will be used to develop a list of site specific chemicals of concern (COCs), with consideration also given to the human health and ecological concerns related to corresponding background constituent concentrations.

Remedial goal options (RGOs) will be developed in instances where attainment of PRGs are demonstrated to be technically impracticable from an engineering perspective or where other circumstances prohibit achieving the initial goals. In such a case, the RGOs will be developed in consultation with USEPA, SCDHEC, and the Navy.

Corrective Measures Study

The corrective measures study will technically begin with the identification of presumptive remedies early on in the investigative process although a detailed evaluation of the alternatives will not begin until after the data collection efforts have started. The data shall be used to design the most appropriate and cost effective remedial action for each site.

RFI Reports

A RFI report will be generated for each investigative zone upon completion of field work within the respective zone. One final, comprehensive report summarizing all of the zone reports and addressing NAVBASE as a single entity will be written upon completion and regulatory review of the final zone report.

2.1 Orientation Meeting

Before performing any field activities at the NAVBASE, sampling personnel will attend an orientation meeting summarizing general and site-specific requirements for sampling and documentation at NAVBASE. General topics to be discussed will include the base location, the locations of the site office trailer, subject site, decontamination area within the base; and the Comprehensive Health and Safety Plan (CHASP). Sampling requirements to be discussed will include general sampling protocol, the Unified Soil Classification System (USCS), use of the stainless-steel sampling sleeves if applicable, the sample numbering system, quality assurance/quality control (QA/QC) sampling requirements, and sample packaging. Documentation requirements to be discussed will include the use of field forms, field logbooks, and documentation of photographs. A checklist of requirements and an acceptance form

indicating the above items have been reviewed by sampling personnel are provided in Appendix A.

2.2 General Sampling Requirements

General procedures for field personnel to follow when collecting environmental samples are included in this section. Detailed sampling procedures are discussed in Sections 4, 6, 7, 8, and 9. These general procedures are designed to prevent cross-contamination of samples.

General Sampling Procedures:

- Field sampling teams will have at least two people. One person will collect the sample as the other ensures adherence to the sampling procedures, records any difficulties encountered, and documents other information pertinent to the investigation. When sampling using the peristaltic pump/vacuum jug technique (often the preferred method for shallow wells where turbidity is of concern), the recommended order of collection is metals, cyanide, pesticides/PCBs, volatiles.
- All sampling activities in each medium will proceed from the area of least contamination to greatest contamination, if possible. If free product or contaminant-saturated media are encountered, collect grab samples there.
- The preferred order of sample collection in all media will be as follows (on a parameter basis): volatile organic analysis (VOA), total organic carbon (TOC), semivolatile organic compounds (SVOA), pesticides, herbicides, polychlorinated biphenyls (PCB), total metals, dissolved metals, cyanide, inorganics, and turbidity.
- The sampler will don a clean pair of protective gloves before collecting each sample.
- Samples for chemical analysis will be collected with either disposable sampling devices or decontaminated, stainless-steel or Teflon™ devices. When composite samples are required, they will be homogenized in stainless-steel bowls. All sampling equipment will be decontaminated in accordance with the procedures outlined in Section 15 of this plan.

- Disposable sample equipment will be constructed of Teflon™. The device will be decontaminated by the manufacturer before shipment to the site. An equipment rinsate blank will be collected before use.
- Fill all sample bottles, except for volatile organic analysis (VOA) bottles, to the shoulder to compensate for temperature and pressure changes during transport. If the container is filled below the shoulder, mark the level with a permanent marker or grease pencil. VOA bottles will be filled until there is zero headspace.
- Samples collected for VOA analysis will not be homogenized.
- All samples requiring chemical preservation shall be preserved immediately after field collection or the bottles may be preserved before sample collection.
- After collection, samples exhibiting obvious visual or olfactory contamination will be separated from the samples not exhibiting such evidence of contamination.
- Precleaned sample containers will be provided by the analytical laboratory except for the stainless-steel sleeves used for soil sampling, which will be decontaminated onsite. All data relative to sample container integrity shall be documented in the site log.
- Heterotrophic plate count samples will be collected with sterile containers and scoops provided by the laboratory.

Sample Processing:

Some of the analyses to be performed on selected samples require them to be preserved immediately after collection to maintain their integrity, as per the following procedures:

- Clearly identify the chemical preservative on the sample label.
- Chill all samples to 4 degrees centigrade (°C) immediately after collection and during shipment to the laboratory. In each cooler, include a 40-milliliter (ml) vial of tap water as a temperature blank or place a temperature strip on a sample bottle to measure its temperature at the time of receipt. If possible, samples from different sites will not be placed in the same cooler.

- Handle the samples as infrequently as possible. Use extreme care to ensure samples are not cross-contaminated. Use sealable plastic bags to protect samples from cross-contamination.
- A trip blank, prepared by the laboratory, will be shipped with each set of samples to be analyzed for VOA. It is not necessary to refrigerate trip blanks before use; store in a dust-free, organic-free environment away from fuels, solvents, and volatile compounds. Discard any trip blanks with bubbles larger than a pinhead.
- **Avoid headspace (bubbles) in all VOA samples.** VOA samples effervescing due to dissolved gases or high carbonate content will not be preserved with hydrochloric acid (HCl). Document unpreserved VOA samples on the chain-of-custody form and notify the laboratory before shipment.
- Identify and fully document all samples in the field logbook, on the chain-of-custody forms, and on the sample labels. Refer to the specific instructions for completing sample labels and chain-of-custody forms in Sections 11.3, 11.4, and 11.5 of this plan. Document all samples in accordance with the DMP.
- Follow chain-of-custody procedures to assure sample custody is maintained in a reliable manner and to assure each step in transportation to the laboratory is documented. This process will be initiated in the field and followed throughout the sampling process. Document chain-of-custody in accordance with the procedures described in Section 11.5 of this plan.
- Every effort will be made to ship all samples overnight to the laboratory on the day of collection via express air courier. Refer to Section 11.3 for sample shipment procedures. Record airbill numbers on the chain-of-custody forms.
- The laboratory will be notified in advance of sample shipment.

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3.0 INVESTIGATIVE STRATEGY

This chapter describes and summarizes the installation-wide environmental restoration and compliance strategy for NAVBASE. Prior to the announcement of the Base Realignment and Closure Commission, the IRP effort was in the early stages of the RFI to identify and characterize environmental contamination. With the closure announcement, the strategy shifted to expediting the investigation and moving more to remediation to facilitate property disposal. Figure 3-1 provides a flowchart illustrating the steps necessary to environmentally restore NAVBASE and transfer the property to the community.

The strategy for determining the most effective response mechanism for contaminant sources and contaminated areas is being performed on a case-by-case basis by the BCT. The BCT has developed a comprehensive strategy to identify the appropriate regulatory programs applicable to the areas of contamination discovered during the closure process.

3.1 Zone Designation and Strategy

Zone Designations

All NAVBASE investigations and subsequent remedial activities are being conducted under the RCRA process. As such, the base has been subdivided into investigative zones, which are described in Table 3-1. Since these zones are for investigative purposes only, it is possible they will be further subdivided or integrated as the investigation proceeds. Any subdivision will be given a number designation with a corresponding zone letter designation (i.e., A-1, A-2, A-3, etc.). If the information collected from the groundwater sampling indicates a wide spread problem overlapping established zones, the groundwater itself may be designated as an additional zone. The industrial portion of the sanitary system will require investigation as a separate unit due to the magnitude and need to establish the condition of the system before conveying property to industrial users whose operations could potentially have an adverse effect on the lines. Since the railroad system also traverses multiple zone boundaries, it will likely be investigated concurrently with the sewer system.

In response to base closure environmental restoration goals, the BCT Project Team has divided the base into 12 investigative zones. These zones encompass the entire area of the base, as well as the non-contiguous properties. The zones were established based on the following criteria:

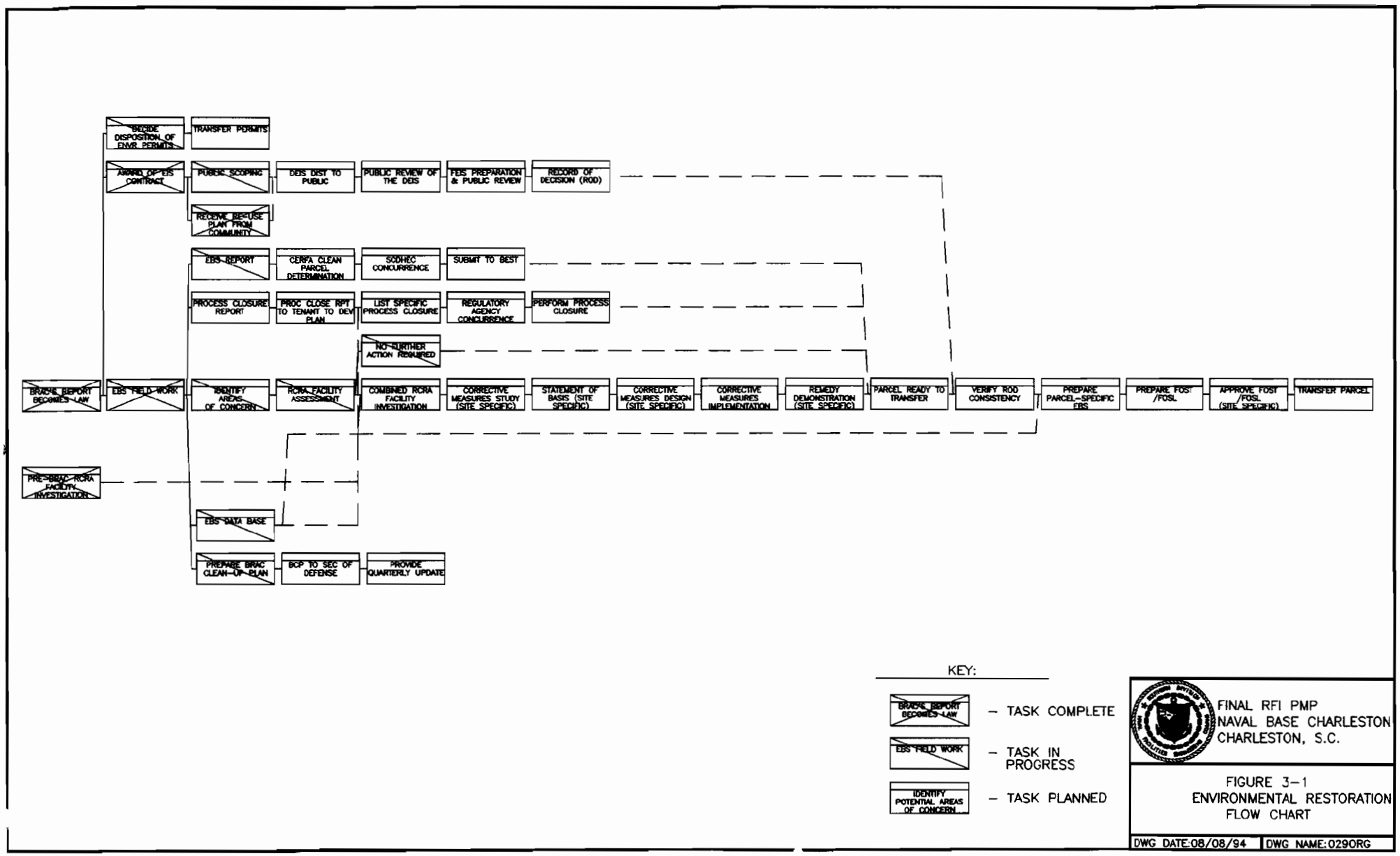
- Areas which pose the greatest environmental concern.
- Areas for which similar contaminants are expected or similar types of activity have occurred.
- Areas small enough to be manageable.
- Areas based upon existing geographical features.
- Areas that can be investigated quickly.
- Areas of significant community interest.

Zones A through L contain all of the original SWMU sites on the base as well as the additional SWMUs and AOCs that are in the RFA.

3.2 Sequence of Zones

A comprehensive strategy for sequencing these investigative zones has been developed by the BRAC Cleanup Project Team. This strategy involves prioritizing the zones based on actual or potential reuse. A schedule based on the best available information is presented in the Corrective Action Management Plan (CAMP). As stated in the CAMP, this schedule is subject to change periodically.

The current strategy is to use multiple teams of contractor personnel to perform the investigation. Through the use of multiple investigative teams, several zones will be investigated simultaneously. A quick-response team also will be used to handle areas that are targeted for rapid turnover.



FINAL RFI PMP
NAVAL BASE CHARLESTON
CHARLESTON, S.C.

FIGURE 3–1
ENVIRONMENTAL RESTORATION
FLOW CHART

DWG DATE:08/08/94 | DWG NAME:029ORG

Table 3-1
Zone Descriptions
NAVBASE

Zone A	This zone is located at the extreme northern portion of the main base, and includes all base areas north of Noisette Creek.
Zone B	This zone is composed of the base golf course and senior officers housing areas.
Zone C	This zone is composed of administrative areas, additional housing areas, warehouses, and the base coal pile.
Zone D	This zone consists of property and facilities between Reynolds and McMillan avenues. It contains primarily parking areas and warehouses.
Zone E	This zone is located on the waterfront and includes the shipyard industrial areas and dry docks.
Zone F	This zone is located in the central portion of the base, and includes the area between Hobson Street, Carolina Street, the eastern base boundary, Wood Street and 11th Street.
Zone G	This zone, also located in the central portion of the base, includes the FISC petroleum facilities as well as the Chicora Tank Farm. The Chicora Tank Farm is not located on the base itself, but is located approximately 0.5 miles east of the base. However, since Chicora is connected to the base via pipeline easements, it is included in Zone G.
Zone H	This zone is at the southern end of the base. It contains properties identified for the State Department transfer as well as Naval support activities, training areas, and administrative areas.
Zone I	This zone comprises the remainder of the southern end of the base. It includes the waterfront property from Halsey Street to the southern tip.
Zone J	This zone includes the water bodies such as the creeks, wetlands, and the Cooper River.
Zone K	This zone is composed of all additional non-contiguous properties (the Short Stay recreational facility, the antenna site on Sullivan's Island, the Naval Annex, the island, and the downtown degaussing facility).
Zone L	Industrial Sanitary Sewer and Railroad System

If at any point during the investigation of a site, sufficient information becomes available to support corrective measures studies/action or to determine that no further investigation is needed at that time (with the concurrence of USEPA and SCDHEC), investigative activities will be terminated.

4.0 CORRECTIVE MEASURES

4.1 Early Actions Strategy

Several sites have been tentatively identified for early actions. These include:

- Multiple unexploded ordnance sites.
- Defense Reutilization and Marketing Office (DRMO) lead contamination in Zone A (SWMU 2).
- Old Public Works Department Storage Area (SWMU 6).
- Multiple UST sites.

4.2 Remedy Selection Approach

Remedies will be selected in accordance with statutory and RCRA Corrective Measures Study criteria. The BCT will involve all parties who have an impact on the remedies selected. An important source of input will be the Restoration Advisory Board (RAB). Particular attention will be given to the following items when evaluating alternatives:

- Background concentrations, particularly of inorganic compounds.
- Land use/risk assessment. Risk assessment protocols will incorporate future land use in its exposure scenarios.
- Basewide treatment facilities.
- Applicable remedies. The presumptive remedy approach advocated in USEPA's 30-day study will be applied in selected cases.
- POL remedies. Source-specific actions for petroleum, oils, and lubricants will be addressed under South Carolina's UST program as POL releases have occurred mostly as a result of leaking UST's. Any groundwater contamination that can be determined to be originating from a specific leaking UST will be remediated under existing state UST regulations, otherwise the appropriate groundwater remediation will be included in the IRP.

BCT Project Team meetings will be held to discuss presumptive remedies early in the RFI process to ensure the RFI focuses on gathering the appropriate types of data to support remedial design.

4.3 Corrective Action Management Units (CAMU) and Temporary Units (TU)

Corrective actions, resulting from RFIs and subsequent Corrective Measures Studies (CMS), will generate remediation wastes within each zone. NAVBASE may employ CAMUs within the corrective actions implemented under the RCRA permit. Complying with 40 CFR 264 Subpart S, a CAMU will be used exclusively for managing remediation wastes resulting from implementing corrective actions. Moreover, it may be necessary to use TUs for temporary storage or treatment of hazardous remediation wastes during remediation activities.

5.0 PROJECT SCHEDULES

5.1 Compliance Schedule

The HSWA portion of the Part B permit contains a facility submission or compliance schedule based on task vs. duration for completing the RFI/CMS. The schedule presented in Table 5-1 does not include specific dates for milestones because the start dates for some of the tasks are not currently known. A Corrective Action Management Plan (CAMP), which contains a proposed calendar-based schedule, has been prepared and submitted concurrently with the Comprehensive RFI Work Plan.

5.2 Meeting Schedule

Meetings are scheduled as required by the applicable program. Meetings are typically held as follows:

- Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) and naval base personnel: Bi-weekly to share information, discuss and resolve any cross-functional problems.
- BECs and CLEAN Contractor: Monthly partnering sessions to ensure consistency of approach and deliverables between the SOUTHNAVFACENGCOM Comprehensive Long Term Environmental Action Navy (CLEAN) contractors. This also provides access to private sector contractors' expertise regarding property transfer.
- RAB: As needed.
- BRAC Cleanup Team: Monthly, and more often as necessary.

Table 5-1
Facility Submission Summary

Facility Submission Requirements	Due Date
Notification to USEPA of Discovery of New SWMUs/AOCs.	Within 15 Days of Discovery.
RFA Information	Within 90 Days of Notification.
RFI Work Plan	120 Days After Effective Date of Permit.
RFI Progress Reports	Quarterly Beginning 90 Days from Implementation of RFI Work Plan.[1]
Draft RFI Report	90 Days after RFI Completion.
Final RFI Report	30 Days after Receipt of USEPA and SCDHEC Comments on Draft RFI Report.
Interim Measures Progress Reports	Semi-annually beginning 180 Days from Implementation of IM.[1]
Interim Measures Report	Within 90 Days of Completion.
Imminent Hazard Report	Oral Within 24 Hours; Written Within 15 Days
Corrective Measures Study/Plan	As Determined by the USEPA and SCDHEC after Review of RFI and Permit Modification.[2]

Notes:

[1] — This applies to Work Plan execution that requires more than 180 days.

[2] — The BCT has agreed that the CMS and Baseline Risk Assessment will be completed as much as possible in conjunction with the RFI rather than in sequence.

6.0 PROJECT MANAGEMENT RESPONSIBILITIES

6.1 NAVBASE

In general, NAVBASE is responsible for ensuring conditions of the permit are satisfied. As previously mentioned, ultimate responsibility is held by the Commander, CNSY. Within NAVBASE, the Occupational Safety, Health and Environmental Office, Code 106, is responsible for compliance with the permit conditions.

6.2 SOUTHNAVFACENGCOM

The SOUTHNAVFACENGCOM EICs, Mr. Matthew A. Hunt and Mrs. Thuane B. Fielding, are responsible for the technical and financial management of the IR program activities at NAVBASE Charleston. They prepare the project statement of work; manage the project scope, schedule, and budget; and provide technical review and approval of all deliverables. They will be responsible for approving changes in the IR program scope of work.

6.3 EnSafe/Allen & Hoshall

EnSafe/Allen & Hoshall (E/A&H) is under contract to SOUTHNAVFACENGCOM to design and implement the RFI at NAVBASE. Resumes of key personnel who will be working on the project are included as Appendix C.

6.4 BRAC Cleanup Team

The NAVBASE BCT has been established and is composed of two BRAC Environmental Coordinators (BECs) representing DOD, a USEPA Region IV representative, and a SCDHEC representative. Formal BCT meetings are held each month and provide the means of conducting periodic program reviews and attainment of consensus on decisions with federal and state regulators. An ongoing dialogue is accomplished by having a USEPA team member located onsite and having access to the SCDEHC local district office. The BRAC Cleanup Project Team includes representatives of USEPA Region IV, SCDHEC, SOUTHNAVFACENGCOM, NAVBASE and other key participants including the Building Economic Solutions Together

(BEST) Committee and other technical consultants. A list of the team members and specifies their roles and responsibilities is included as Appendix D.

7.0 COMMUNITY INVOLVEMENT/STRATEGY

A Community Relations Plan (CRP) has been implemented to encourage open communication among NAVBASE; federal, state, and local regulatory agencies; interested community groups; and, individual community residents regarding environmental activities initiated at NAVBASE in connection with it's closure. The CRP will ensure that all interested individuals, groups, or offices are provided accurate, consistent information throughout the base closure process. All information will be timely and will relate to cleanup activities, contaminants identified, possible effects of any contamination identified, and remedial actions proposed for any contamination found on the base. The CRP provides several ways for all parties to provide input into the decision-making process of the IRP.

The Charleston BCT has adopted the following strategy to encourage and support a proactive community relations program that will meet or exceed requirements of current environmental legislation (e.g., CERCLA, RCRA, HSWA, etc.):

- Publish points of contact on the base for information on the BRAC cleanup actions.
- Develop a list of speakers for making presentations to community groups regarding BRAC cleanup initiatives.
- Update CRP as needed (add activities that will ensure continuous and timely information is made available, add individuals, groups, and offices to the mailing list, etc.).
- Publish information frequently to keep the community up-to-date on the progress of environmental restoration and disposal programs (e.g., fact sheets, media releases, paid ads, etc.).
- Hold 30-day public comment periods on proposed actions and respond to all comments in a responsiveness summary.
- Hold informal and formal public meetings when needed or required during the BRAC clean up process (e.g., to explain the Navy's approach to the BRAC cleanup, proposed actions to cleanup the base or specific sites, required meetings during the response process, etc.).

- Provide an opportunity for public comment on removal actions selected for the base.
- Establish and maintain an information repository to make documents available to the public.
- Establish a RAB from the Technical Review Committee (TRC) to provide a forum for public involvement.

APPENDIX A

SOLID WASTE MANAGEMENT UNIT SUMMARY LIST AND AREAS OF CONCERN LIST

APPENDIX A-1

SOLID WASTE MANAGEMENT UNIT SUMMARY

Table A-1
Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By SWMU Number
April 1996

SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
1	SWMU	DRMO Storage Area	Hazardous Wastes, Lead	RFI	DRMO	A
2	SWMU	Lead Contaminated Area	Lead	RFI	DRMO	A
3	SWMU	Pesticide Mixing Area	Pesticides	RFI	Building 249	G
4	SWMU	Pesticide Storage Building	Pesticides	RFI	Building 381	F
5	SWMU	Battery Electrolyte Treatment Area	Acids	RFI	Area of Building 1797	E
6	SWMU	Public Works Storage Yard (Old Corral)	Hazardous Wastes, Lead	RFI	Old Corral Southwest of Building 380	G
7	SWMU	PCB Transformer Storage Yard	PCBs	RFI	Old Corral Southwest of Building 380	G
8	SWMU	Oil Sludge Pit	Oil Sludges	RFI	Parking Area Southwest of Building 161	G
9	SWMU	Closed Landfill	Industrial Wastes	RFI	Open Area Between Bainbridge and West Road	H
10	SWMU	Hazardous Waste Storage Facility, Building 246	Industrial Wastes	RU	Building 246	G
11	SWMU	Caustic Pond	Calcium Hydroxide	RFI	Southeast of Building 190	G
12	SWMU	Old Fire Fighter Training Area	Petroleum	RFI	Southern Tip of Base	I
13	SWMU	Current Fire Fighter Training Area	Petroleum	RFI	Area of Building 1303	H
14	SWMU	Chemical Disposal Area	Decontaminating Agent	RFI	South of Building 1897	H
15	SWMU	Incinerator	Products of Incomplete Combustion, Paper	RFI	South of Building 1843	H
16	SWMU	Paint Storage Bunker	Paint, Thinner	RFI	West of Building X 55	I
17	SWMU	Oil Spill Area	Oil	RFI	North Side of Building 61	H
18	SWMU	PCB Spill Area	PCBs	RFI	Building 1278	E

Table A-1
Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By SWMU Number
April 1996

SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
19	SWMU	Solid Waste Transfer Station	Solid Wastes	RFI	West of Least Tern Lane	H
20	SWMU	Waste Disposal Area	Solid Wastes	RFI	Norhteast of Building 903	H
21	SWMU	Old Paint Storage Center (Waste Paint Storage Pad)	Paint, Thinner	RFI	Area of Building 1275	E
22	SWMU	Old Plating Shop Wastewater Treatment System	Cadmium, Chromium	RFI	Alley Between Buildings 5 and 44	E
23	SWMU	New Plating Shop Wastewater Treatment System	Heavy Metals, Solvents	RFI	Building 226	E
24	SWMU	Waste Oil Reclamation Facility	Waste Oil	RFI	Fuel Farm Area	G
25	SWMU	Building 44, Old Plating Operation	Cyanide, Metals	RFI	Building 44	E
26	SWMU	Waste Storage Area, Building 64-40, Pier C	Paint, Thinner	NFI	Pier C Building 64 - 40	E
27	SWMU	Waste Storage Area East End, Pier C	Paint, Thinner	NFI	East End Pier C	E
28	SWMU	Waste Storage Area West End, Pier C	Paint, Thinner	NFI	West End Pier C	E
29	SWMU	Building X-10	Hazardous Wastes	NFI	Building X 10	G
30	SWMU	Building 13 SAA #39	Hazardous Wastes	NFI	Building 13	E
31	SWMU	Waste Paint Storage Area Drydock #5	Paint, Thinner	NFI	Drydock 5	E
32	SWMU	Waste Paint Storage Area Building 195	Paint, Thinner	NFI	Building 195	E
33	SWMU	Waste Paint Storage Area West End, Drydock #2	Paint, Thinner	NFI	Drydock 2	E
34	SWMU	MWR, Southeast of Building X-10	Refrigerant, Waste Oil	NFI	Southeast of Building X 10	G

Table A-1
Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By SWMU Number
April 1996

SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
35	SWMU	Building X-12	Hazardous Wastes	NFI	Building X 12	G
36	SWMU	Building 68 Battery Shop	Sulfuric Acid	RFI	Building 68	F
37	SWMU	Sanitary Sewer System	Industrial Wastes	RFI	Basewide	L
38	SWMU	Miscellaneous Storage, North of Building 1605	Waste Oil	CSI	North of Building 1605	A
39	SWMU	Former POL Drum Storage, Building 1604	Petroleum Products	RFI	North of Building 1604	A
40	SWMU	DRMO, Building 1640	Hazardous Wastes	RU	Building 1640	A
41	SWMU	Battery Charging Station, Building 1624	Lead, Sulfuric Acid	NFI	Building 1624	A
42	SWMU	Former Asphalt Plant and Tanks	Asphalt Products, Solvents, Degreasers	CSI	Northwest of Building 1803	A
43	SWMU	Publications and Printing Plant, Building 1628	Chromium, Lead	CSI	Building 1628	A
44	SWMU	Coal Storage Yard	Coal and Coal By-Products	RFI	South Side of Noisette Creek	C
45	SWMU	SAA, Building NH-51	Photograph Fixer/ Developer	NFI	Building NH 51	C
46	SWMU	Temporary SAA, Building NH-21	Lead Paint Removal Debris	NFI	Building NH 21	C
47	SWMU	Burning Dump, Building NSC 66 Area	Products of Incomplete Combustion	RFI	Building NSC 64 66 67	C
48	SWMU	SAA, Building 234	Photo Chemicals, Ammonia, EDTA Containers	NFI	Building 234	C
49	SWMU	Forklift Battery Charging Station, Building 219	Lead, Sulfuric Acid	NFI	Building 219	C

Table A-1
Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By SWMU Number
April 1996

SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
50	SWMU	SAA, Building NH-1	Xylene, Toluene, Coating Resin	NFI	Building NH 1	D
51	SWMU	SAA, Building NH-1	Xylene, Hazardous Wastes	NFI	Building NH 1	D
52	SWMU	SAA, Building NH-1	Hazardous Wastes	NFI	Building NH 1	D
53	SWMU	SAA, Building 212	Paint, Thinner	RFI Investigate w/ AOC 526	Building 212	E
54	SWMU	Former Abrasive Blasting Area	Blast Residue	RFI Investigate w/ SWMU 21	Area of Building 1275	E
55	SWMU	SAA, Building 59A	Paint, Thinner, Glue	NFI	Building 59 A	E
56	SWMU	SAA, Building 2A	Adhesives	NFI	Building 2 A	E
57	SWMU	SAA, Building 35	Petroleum Products	NFI	Building 35	E
58	SWMU	SAA, Building 35	Acids/Metals, Alcohol	NFI	Building 35	E
59	SWMU	SAA, Building 35	Hazardous Wastes	NFI	Building 35	E
60	SWMU	Less-Than-90-Day Accumulation Area, Building 2	Petroleum Products, Solvents, Paint	NFI	Building 2	E
61	SWMU	Less-Than-90-Day Accumulation Area, Building 228	Adhesives	NFI	Building 228	E
62	SWMU	SAA, Building 226	Plating Solution, Metal Hydroxide, Misc. Plating Supplies/Debris	NFI	Building 226	E
63	SWMU	Battery Charging Station, Former Building 73	Lead, Acids	CSI	Area of Building 226	E

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Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By SWMU Number
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SWMU Number	Unit Definition	SWMU Name	Materials Relaased, Stored, or Disposed	Investigative Approach	Location	Study Zone
64	SWMU	SAA, Building 56	Paint	NFI	Building 56	E
65	SWMU	Lead Storage Area, Building 221	Lead	RFI	Building 221	E
66	SWMU	SAA, Pier C	Paint	NFI	Pier C	E
67	SWMU	Mercury Gauge Room, Building 3	Mercury	CSI	Building 3	E
68	SWMU	SAA, Building 5	Adhesives, Paints	NFI	Building 5	E
69	SWMU	SAA, Building 5	Paint, Adhesives	NFI	Building 5	E
70	SWMU	Dip Tank Area, Building 5	Copper, Chromium Arsenate	RFI	Building 5	E
71	SWMU	SAA, Building 44	Petroleum Products, Metal Shavings	NFI	Building 44	E
72	SWMU	Less-Than-90-Day Accumulation Area, Building 44	Metal Debris	NFI	Building 44	E
73	SWMU	SAA, Building 43	Petroleum Products, Used Coolants, Solvents	NFI	Building 43	E
74	SWMU	SAA, Building 57	Tetrachloroethylene	NFI	Building 57	E
75	SWMU	SAA, Drydock #1	Hazardous Wastes	NFI	Drydock 1	E
76	SWMU	SAA, Building 32	Paint, Hazardous Wastes	NFI	Building 32	E
77	SWMU	SAA, Drydock #2	Paint, Hazardous Wastes	NFI	Drydock 2	E
78	SWMU	SAA, Drydock #2	Hazardous Wastes	NFI	Drydock 2	E
79	SWMU	SAA, Building 250	Hazardous Wastes	NFI	Building 250	E
80	SWMU	Paint Shop Storage, Building 194	Lead, Paint, Solvents, Sand-Blasting Grit	CSI	Building 194	E

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Solid Waste Management Unit Summary - Sorted By SWMU Number
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
81	SWMU	Less-Than-90-Day Accumulation Area, Building 1245	Paint, Trichloroethane	CSI	Building 1245	E
82	SWMU	SAA, Building 177	Solvents, Xylene, Petroleum Products, Adhesives, Preservatives, Acetone, MEK, Toluene	NFI	Building 177	E
83	SWMU	Building 9 Foundry	Lead, Solvents, PCBs	RFI	Building 9	E
84	SWMU	Lead Storage, Building 9	Lead	RFI	Building 9	E
85	SWMU	SAA, Building 9	Paint Debris, Petroleum Products	NFI	Building 9	E
86	SWMU	Less-Than-90-Day Accumulation Area, Building 9	Paint, Petroleum Products	NFI	Building 9	E
87	SWMU	Less-Than-90-Day Accumulation Area, Building 80	Paint, Petroleum Products, Mercury, Chelating Agents	CSI	Building 80	E
88	SWMU	SAA, Building 25	Hazardous Waste Storage	NFI	Building 25	E
89	SWMU	SAA, Building 13	Acids/Metals, Lab Samples, Freon 133	NFI	Building 13	E
90	SWMU	SAA, Building 13	Petroleum Products	NFI	Building 13	E
91	SWMU	SAA, Building 13	Petroleum Products	NFI	Building 13	E
92	SWMU	SAA, Building 13	Acids/Metals (ICP Waste)	NFI	Building 13	E
93	SWMU	SAA, Building 13	Kodak Fixer, Miscellaneous	NFI	Building 13	E
94	SWMU	SAA, Building 13	Acids, Acids/Metals, Alcohol	NFI	Building 13	E
95	SWMU	SAA, Building 13	Used Analytical Reagents	NFI	Building 13	E

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Solid Waste Management Unit Summary - Sorted By SWMU Number
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
96	SWMU	Less-Than-90-Day Accumulation Area, Building 236	Petroleum Products, Paint	NFI	Building 236	E
97	SWMU	Less-Than-90-Day Accumulation Area, Building 236	Petroleum Products, Solvents	CSI	Building 236	E
98	SWMU	SAA, Pier G	Hazardous Waste Storage	NFI	Pier G	E
99	SWMU	SAA, Pier G	Marine Anti-Foulant Paint, Thinner	NFI	Pier G	E
100	SWMU	SAA, Building 218	Petroleum Products, Paint, Sandblast Grit	RFI	Building 218	E
101	SWMU	Less-Than-90-Day Accumulation Area, Building 1173	Hazardous Waste Accumulation	NFI	Building 1173	E
102	SWMU	Mercury Spill, Building 79	Mercury	CSI	Building 79	E
103	SWMU	SAA, Drydock #5	Hazardous Waste Storage	NFI	Drydock 5	E
104	SWMU	Reserved	—	—	— —	E
105	SWMU	SAA, Building 1518 (Diver's Locker)	Petroleum Products, Marine Anti-Foulant Paint, Thinner	NFI	Building 1518	E
106	SWMU	Blast Area in Drydock #3	Blast Residue	RFI	Drydock 3	E
107	SWMU	Temporary SAA, CBU-412 Chapel	Lead Paint Removal, Construction Debris	NFI	Chapel CBU 412	F
108	SWMU	SAA, Building 187	Hazardous Waste Storage	NFI	Building 187	F
109	SWMU	Abrasive Blast Media Storage Area	Blast Media	CSI	Structures 1364 1365 1393	F

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Solid Waste Management Unit Summary - Sorted By SWMU Number
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
110	SWMU	SAA, Building 1346	Paint, Grease	NFI	Building 1346	F
111	SWMU	SAA, Building 241	Marine Anti-Foulant Paint, Thinner	NFI	Building 241	F
112	SWMU	SAA, Building 241	Marine Anti-Foulant Paint, Thinner	NFI	Building 241	F
113	SWMU	SAA, Building 241	Marine Anti-Foulant Paint, Thinner, Petroleum Products	NFI	Building 241	F
114	SWMU	SAA, Building 241	Petroleum Products	NFI	Building 241	F
115	SWMU	SAA, Building 242	Petroleum Products	NFI	Building 242	F
116	SWMU	SAA, Building 1175	Petroleum Products	NFI	Building 1175	F
117	SWMU	SAA, Building 249	Marine Anti-Foulant Paint, Thinner	NFI	Building 249	G
118	SWMU	Temporary SAA, Pier Z	Marine Anti-Foulant Paint, Thinner	NFI	Pier Z	G
119	SWMU	Garbage Handling, Facility 1271	Solid Wastes	NFI	End of Building 336	G
120	SWMU	Pier M Laydown	Marine Anti-Foulant Paint, Thinner, Lead	RFI	Pier M	G
121	SWMU	SAA, Building 801	VOCs, Metals, Petroleum Products	RFI Investigate w/ SWMU 9	Building 801	H
122	SWMU	SAA, Building 636	Marine Anti-Foulant Paint, Thinner, Grease	NFI	Building 636	H
123	SWMU	SAA, Building 636	Marine Anti-Foulant Paint, Thinner, Grease	NFI	Building 636	H

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Solid Waste Management Unit Summary - Sorted By SWMU Number
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
124	SWMU	SAA, Building 1508	Marine Anti-Foulant Paint, Thinner, Petroleum Products	NFI	Building 1508	H
125	SWMU	SAA, Building 202	Mercuric Nitrate Waste	NFI	Building 202	H
126	SWMU	SAA, Building 202	Mercuric Nitrate Waste	NFI	Building 202	H
127	SWMU	SAA, Building 202	Mercuric Nitrate Waste	NFI	Building 202	H
128	SWMU	SAA, Building 202	Mercuric Nitrate Waste	NFI	Building 202	H
129	SWMU	SAA, Building 202	Spent OBA Canisters	NFI	Building 202	H
130	SWMU	SAA, Building 202	Petroleum Products	NFI	Building 202	H
131	SWMU	SAA, Building NS-67	Dry Paint Waste	NFI	Building NS 67	H
132	SWMU	SAA, Building FBM 61	Mercuric Nitrate	NFI	Building 61	H
133	SWMU	SAA, Building FBM 61	Borate Cupric Sulfate, Petroleum Products	NFI	Building 61	H
134	SWMU	SAA, Building FBM 61	Hazardous Waste Storage	NFI	Building 61	H
135	SWMU	SAA, Building FBM 61	Hazardous Waste Storage	NFI	Building 61	H
136	SWMU	SAA, Building NS-53	VOCs, Metals, Petroleum Products	CSI	Building NS 53	H
137	SWMU	SAA, Building 675	Photograph Fixer	NFI	Building 657	H
138	SWMU	SAA, Building 1776	VOCs, Waste Oil, Petroleum Products, Antifreeze	CSI	Building 1776	H
139	SWMU	Former Temporary SAA, Pier P	Marine Anti-Foulant Paint, Thinner	NFI	Pier P	I

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Solid Waste Management Unit Summary - Sorted By SWMU Number
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
140	SWMU	Temporary SAA, Pier P	Marine Anti-Foulant Paint, Thinner	NFI	Pier P	I
141	SWMU	Temporary SAA, Pier Q	Marine Anti-Foulant Paint, Thinner	NFI	Pier Q	I
142	SWMU	Less-Than-90-Day Accumulation Area, Building 681	Paint, Aerosol	NFI	Building 681	I
143	SWMU	Building 222	Mercuric Nitrate, Silver Nitrate, Chromium, Lead, Flammable Wastes, Chromium/Lead Paint	NFI	Building 222	E
144	SWMU	SAA, Building 222, CNSY Permit #88	Flammable Wastes, Lead, Cadmium, Brass, Bronze	NFI	Building 222	E
145	SWMU	Mercury Spill Area, Building 13A	Mercury	CSI	Under Building 13 A	E
146	SWMU	SAA, Building 13A, CNSY Permit #85	Lead	NFI	Building 13 A	E
147	SWMU	SAA, Pier C, CNSY Permit #79	Waste Oil, Aerosol Cans	NFI	Pier C	E
148	SWMU	SAA, Building 194, CNSY Permit #81	Marine Anti-Foulant Paint Waste, Thinner	NFI	Building 194	E
149	SWMU	Metal Trades SAA, Drydock #5, CNSY Permit #T06	Marine Anti-Foulant Paint Waste, Thinner	NFI	Area of Drydock 5	E
150	SWMU	Braswell Shipyard SAA, Pier Z, CNSY Permit #93	Paint Wastes, Thinner	NFI	Pier Z	G
151	SWMU	Building 79A	Mercuric Nitrate, Silver Nitrate, Chromium, Lead, Flammable Wastes, Chromium/Lead Paint	NFI	Building 79 A	E

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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
152	SWMU	SAA, Building 79A, CNSY Permit #92	Flammable Wastes, Lead, Brass, Bronze	NFI	Building 79 A	E
153	SWMU	SAA, Pier H, CNSY Permit #91	Marine Anti-Foulant Paint Waste, Thinner	NFI	Pier H	E
154	SWMU	SAA, Pier H, CNSY Permit #80	Waste Oil, Aerosol Cans	NFI	Pier H	E
155	SWMU	Building 101	Chromium, Lead, Flammable Wastes, Chromium/Lead Paint	NFI	Building 101	E
156	SWMU	SAA, Drydock #4 Pierside, CNSY Permit #86	Lead, PPE	NFI	Area of Drydock 4	E
157	SWMU	Less-Than-90-Day Accumulation Area, Building 1278, CNSY Permit #83	Investigation Derived Waste (IDW)	NFI	Building 1278	E
158	SWMU	SAA, Pier M Quaywall, CNSY Permit #82	Paint Wastes	NFI	Pier M Quaywall	G
159	SWMU	SAA, Building 665, CNSY Permit #90	Aerosol Cans	RFI	Building 665	H
160	SWMU	SAA, Port Services, CNSY Permit #95	Waste Oil	NFI	Pier S Quaywall	I
161	SWMU	Vehicle Maintenance Shop, Marine Reserve Center	Petroleum Products	CSI	Naval Annex Building 2505	K
162	SWMU	Sludge Drying Field, MOMAG 11	Heavy Metals	CSI	Naval Annex South of Building 2509	K
163	SWMU	Concrete Pit Area 10' x 10' x 2' at MOMAG 11	Paint, Spent Solvents, Heavy Metals, Methane	CSI	Naval Annex North of Building 2513	K
164	SWMU	Blasting Operation, MOMAG 11	Lead, Cadmium	CSI	Naval Annex Building 2556	K
165	SWMU	Painting Operation, MOMAG 11	Paint, Lead	NFI	Naval Annex Building 2556	K
166	SWMU	Sewer System, Naval Annex	Heavy Metals, Petroleum Products, Waste Paint, Solvents	CSI	Basewide, Naval Annex	K

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Solid Waste Management Unit Summary - Sorted By SWMU Number
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
167	SWMU	Less-Than-180-Day Accumulation Area, MOMAG 11, CNSY Permit #94	Waste Paints, Petroleum Products, Spent Solvents, Batteries, Heavy Metals, Aerosol Cans	NFI	Naval Annex South of Building 2522	K
168	SWMU	Building 2A, Temporary Metal Storage Area	Zinc, Metals	NFI	Building 2 A Between Buildings 2 and 59	E
169	SWMU	Building 57, Touch-up Painting Operations	Waste Paint, Paint Thinner, Heavy Metals	NFI	Building 57	E
170	SWMU	Drydock #1 Area, PCB Removal Operations	PCBs	CSI	Area of Drydock 1	E
171	SWMU	Drydock #2 Area, PCB Removal Operations	PCBs	CSI	Area of Drydock 2	E
172	SWMU	Building 80, Steam Cleaning Operations	Petroleum Products	CSI	Building 80	E
173	SWMU	Building 1297, Storage Area	Lead Zinc Misc. Chemicals Unlabelled Drums	CSI	Building 1297	E
174	SWMU	Air Compressor Oil Blowdown, Building 97	Petroleum Lubricating Oils	NFI	Building 97	F
175	SWMU	Crane Painting Area, Near Building 1277	Paint Constituents Heavy Metals Lead Acetone Xylenes Toluene	RFI	South of Building 1277	F
176	SWMU	Transformer Oil Leak, Near Building 657	PCBs	NFI	Building 657	H
177	SWMU	RTC-4 Oil Spill	Petroleum Products	CSI	Building RTC 4	I

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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
178	SWMU	Site of Apparent Transformer Fire Outside of Building NS-53	PCBs Wood Preservatives	CSI	Building NS 53	H
179	SWMU	SAA, Building 222, Shipping and Receiving, CNSY Permit #90	Flammable Wastes Lead Cadmium Brass Bronze	NFI	Building 222	E
180	SWMU	SAA, Building 222, New Fuel Enclosure, CNSY Permit #102	Flammable Wastes Lead Cadmium Brass Bronze	NFI	Building 222	E
181	SWMU	SAA, Metal Trades, CNSY Permit #99	Lead Petroleum Products	CSI	Pier C	E
182	SWMU	SAA, Ships Forces, CNSY Permit #102	Lead Petroleum Products Solvents	NFI	Pier C	E
183	SWMU	Less-Than-90-Day Accumulation Area, Building 79A, CNSY Permit #89	Lead Brass Bronze Chromium Cadmium Alcohol	NFI	High Bay Area of Building 79 A	E
184	SWMU	SAA, Building 79A, CNSY Permit #106	Brass Bronze	NFI	High Bay Area of Building 79 A	E
185	SWMU	Reserved	—	—	— —	E
186	SWMU	SAA, Building 58, CNSY Permit #105	Lead Chromium	NFI	Outside of Building 58	C

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Solid Waste Management Unit Summary - Sorted By SWMU Number
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
187	SWMU	SAA, Paint Waste, CNSY Permit #101	Lead Petroleum Products Solvents	NFI	Head of Drydock North Side 5	E
188	SWMU	SAA, Paint Waste, CNSY Permit #103	Lead Petroleum Products Solvents	RFI	South Side of Drydock Midway 5	E
189	SWMU	SAA, Building 222 Fenced in Area, CNSY Permit #108	Brass Bronze Cadmium	NFI	Outside West End of Building 222	E
190	SWMU	SAA, Pier J, CNSY Permit #110	Brass Cadmium Lead	NFI	Pier J	E
191	SWMU	SAA, Pier G, CNSY Permit #98	Paint and Oil Waste	NFI	Pier G	E
192	SWMU	SAA, Building 222, CNSY Permit #111	Brass Cadmium Lead Bronze Chromium	NFI	Building 222	E
193	SWMU	SAA, Building 79A, CNSY Permit #107	Brass Bronze	NFI	Fenced in Area of Building 79 A	E
194	SWMU	Building 197, Paint Storage, Naval Short Stay	Paint Waste	NFI	Short Stay, Building 197	K
195	SWMU	Building 207, Flammable Storage, Naval Short Stay	Petroleum Products Solvents	NFI	Short Stay, Building 207	K

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Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
22	SWMU	Old Plating Shop Wastewater Treatment System	Cadmium, Chromium	RFI	Alley Between Buildings	5 and 44	E
63	SWMU	Battery Charging Station, Former Building 73	Lead, Acids	CSI	Area of Building	226	E
54	SWMU	Former Abrasive Blasting Area	Blast Residue	RFI Investigate w/ SWMU 21	Area of Building	1275	E
21	SWMU	Old Paint Storage Center (Waste Paint Storage Pad)	Paint, Thinner	RFI	Area of Building	1275	E
13	SWMU	Current Fire Fighter Training Area	Petroleum	RFI	Area of Building	1303	H
5	SWMU	Battery Electrolyte Treatment Area	Acids	RFI	Area of Building	1797	E
170	SWMU	Drydock #1 Area, PCB Removal Operations	PCBs	CSI	Area of Drydock	1	E
171	SWMU	Drydock #2 Area, PCB Removal Operations	PCBs	CSI	Area of Drydock	2	E
156	SWMU	SAA, Drydock #4 Pierside, CNSY Permit #86	Lead, PPE	NFI	Area of Drydock	4	E
149	SWMU	Metal Trades SAA, Drydock #5, CNSY Permit #T06	Marine Anti-Foulant Paint Waste, Thinner	NFI	Area of Drydock	5	E
37	SWMU	Sanitary Sewer System	Industrial Wastes	RFI	Basewide		L
166	SWMU	Sewer System, Naval Annex	Heavy Metals, Petroleum Products, Waste Paint, Solvents	CSI	Basewide, Naval Annex		K
50	SWMU	SAA, Building NH-1	Xylene, Toluene, Coating Resin	NFI	Building	NH 1	D
52	SWMU	SAA, Building NH-1	Hazardous Wastes	NFI	Building	NH 1	D
51	SWMU	SAA, Building NH-1	Xylene, Hazardous Wastes	NFI	Building	NH 1	D
46	SWMU	Temporary SAA, Building NH-21	Lead Paint Removal Debris	NFI	Building	NH 21	C

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Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
45	SWMU	SAA, Building NH-51	Photograph Fixer/ Developer	NFI	Building	NH 51	C
131	SWMU	SAA, Building NS-67	Dry Paint Waste	NFI	Building	NS 67	H
178	SWMU	Site of Apparent Transformer Fire Outside of Building NS-53	PCBs Wood Preservatives	CSI	Building	NS 53	H
136	SWMU	SAA, Building NS-53	VOCs, Metals, Petroleum Products	CSI	Building	NS 53	H
47	SWMU	Burning Dump, Building NSC 66 Area	Products of Incomplete Combustion	RFI	Building	NSC 64 66 67	C
177	SWMU	RTC-4 Oil Spill	Petroleum Products	CSI	Building	RTC 4	I
35	SWMU	Building X-12	Hazardous Wastes	NFI	Building	X 12	G
29	SWMU	Building X-10	Hazardous Wastes	NFI	Building	X 10	G
60	SWMU	Less-Than-90-Day Accumulation Area, Building 2	Petroleum Products, Solvents, Paint	NFI	Building	2	E
168	SWMU	Building 2A, Temporary Metal Storage Area	Zinc, Metals	NFI	Building Between Buildings	2 A 2 and 59	E
56	SWMU	SAA, Building 2A	Adhesives	NFI	Building	2 A	E
67	SWMU	Mercury Gauge Room, Building 3	Mercury	CSI	Building	3	E
70	SWMU	Dip Tank Area, Building 5	Copper, Chromium Arsenate	RFI	Building	5	E
69	SWMU	SAA, Building 5	Paint, Adhesives	NFI	Building	5	E
68	SWMU	SAA, Building 5	Adhesives, Paints	NFI	Building	5	E
84	SWMU	Lead Storage, Building 9	Lead	RFI	Building	9	E

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Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
86	SWMU	Less-Than-90-Day Accumulation Area, Building 9	Paint, Petroleum Products	NFI	Building	9	E
83	SWMU	Building 9 Foundry	Lead, Solvents, PCBs	RFI	Building	9	E
85	SWMU	SAA, Building 9	Paint Debris, Petroleum Products	NFI	Building	9	E
93	SWMU	SAA, Building 13	Kodak Fixer, Miscellaneous	NFI	Building	13	E
90	SWMU	SAA, Building 13	Petroleum Products	NFI	Building	13	E
89	SWMU	SAA, Building 13	Acids/Metals, Lab Samples, Freon 133	NFI	Building	13	E
30	SWMU	Building 13 SAA #39	Hazardous Wastes	NFI	Building	13	E
95	SWMU	SAA, Building 13	Used Analytical Reagents	NFI	Building	13	E
94	SWMU	SAA, Building 13	Acids, Acids/Metals, Alcohol	NFI	Building	13	E
146	SWMU	SAA, Building 13A, CNSY Permit #85	Lead	NFI	Building	13 A	E
92	SWMU	SAA, Building 13	Acids/Metals (ICP Waste)	NFI	Building	13	E
91	SWMU	SAA, Building 13	Petroleum Products	NFI	Building	13	E
88	SWMU	SAA, Building 25	Hazardous Waste Storage	NFI	Building	25	E
76	SWMU	SAA, Building 32	Paint, Hazardous Wastes	NFI	Building	32	E
57	SWMU	SAA, Building 35	Petroleum Products	NFI	Building	35	E
59	SWMU	SAA, Building 35	Hazardous Wastes	NFI	Building	35	E
58	SWMU	SAA, Building 35	Acids/Metals, Alcohol	NFI	Building	35	E
73	SWMU	SAA, Building 43	Petroleum Products, Used Coolants, Solvents	NFI	Building	43	E

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Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
25	SWMU	Building 44, Old Plating Operation	Cyanide, Metals	RFI	Building	44	E
72	SWMU	Less-Than-90-Day Accumulation Area, Building 44	Metal Debris	NFI	Building	44	E
71	SWMU	SAA, Building 44	Petroleum Products, Metal Shavings	NFI	Building	44	E
64	SWMU	SAA, Building 56	Paint	NFI	Building	56	E
169	SWMU	Building 57, Touch-up Painting Operations	Waste Paint, Paint Thinner, Heavy Metals	NFI	Building	57	E
74	SWMU	SAA, Building 57	Tetrachloroethylene	NFI	Building	57	E
55	SWMU	SAA, Building 59A	Paint, Thinner, Glue	NFI	Building	59 A	E
134	SWMU	SAA, Building FBM 61	Hazardous Waste Storage	NFI	Building	61	H
132	SWMU	SAA, Building FBM 61	Mercuric Nitrate	NFI	Building	61	H
135	SWMU	SAA, Building FBM 61	Hazardous Waste Storage	NFI	Building	61	H
133	SWMU	SAA, Building FBM 61	Borate Cupric Sulfate, Petroleum Products	NFI	Building	61	H
36	SWMU	Building 68 Battery Shop	Sulfuric Acid	RFI	Building	68	F
151	SWMU	Building 79A	Mercuric Nitrate, Silver Nitrate, Chromium, Lead, Flammable Wastes, Chromium/Lead Paint	NFI	Building	79 A	E
152	SWMU	SAA, Building 79A, CNSY Permit #92	Flammable Wastes, Lead, Brass, Bronze	NFI	Building	79 A	E
102	SWMU	Mercury Spill, Building 79	Mercury	CSI	Building	79	E

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Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
172	SWMU	Building 80, Steam Cleaning Operations	Petroleum Products	CSI	Building	80	E
87	SWMU	Less-Than-90-Day Accumulation Area, Building 80	Paint, Petroleum Products, Mercury, Chelating Agents	CSI	Building	80	E
174	SWMU	Air Compressor Oil Blowdown, Building 97	Petroleum Lubricating Oils	NFI	Building	97	F
155	SWMU	Building 101	Chromium, Lead, Flammable Wastes, Chromium/Lead Paint	NFI	Building	101	E
82	SWMU	SAA, Building 177	Solvents, Xylene, Petroleum Products, Adhesives, Preservatives, Acetone, MEK, Toluene	NFI	Building	177	E
108	SWMU	SAA, Building 187	Hazardous Waste Storage	NFI	Building	187	F
148	SWMU	SAA, Building 194, CNSY Permit #81	Marine Anti-Foulant Paint Waste, Thinner	NFI	Building	194	E
80	SWMU	Paint Shop Storage, Building 194	Lead, Paint, Solvents, Sand-Blasting Grit	CSI	Building	194	E
32	SWMU	Waste Paint Storage Area Building 195	Paint, Thinner	NFI	Building	195	E
125	SWMU	SAA, Building 202	Mercuric Nitrate Waste	NFI	Building	202	H
130	SWMU	SAA, Building 202	Petroleum Products	NFI	Building	202	H
128	SWMU	SAA, Building 202	Mercuric Nitrate Waste	NFI	Building	202	H
129	SWMU	SAA, Building 202	Spent OBA Canisters	NFI	Building	202	H
127	SWMU	SAA, Building 202	Mercuric Nitrate Waste	NFI	Building	202	H
126	SWMU	SAA, Building 202	Mercuric Nitrate Waste	NFI	Building	202	H

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Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
53	SWMU	SAA, Building 212	Paint, Thinner	RFI Investigate w/ AOC 526	Building	212	E
100	SWMU	SAA, Building 218	Petroleum Products, Paint, Sandblast Grit	RFI	Building	218	E
49	SWMU	Forklift Battery Charging Station, Building 219	Lead, Sulfuric Acid	NFI	Building	219	C
65	SWMU	Lead Storage Area, Building 221	Lead	RFI	Building	221	E
180	SWMU	SAA, Building 222, New Fuel Enclosure, CNSY Permit #102	Flammable Wastes Lead Cadmium Brass Bronze	NFI	Building	222	E
143	SWMU	Building 222	Mercuric Nitrate, Silver Nitrate, Chromium, Lead, Flammable Wastes, Chromium/Lead Paint	NFI	Building	222	E
144	SWMU	SAA, Building 222, CNSY Permit #88	Flammable Wastes, Lead, Cadmium, Brass, Bronze	NFI	Building	222	E
179	SWMU	SAA, Building 222, Shipping and Receiving, CNSY Permit #90	Flammable Wastes Lead Cadmium Brass Bronze	NFI	Building	222	E
192	SWMU	SAA, Building 222, CNSY Permit #111	Brass Cadmium Lead Bronze Chromium	NFI	Building	222	E

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Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By Building Location
April 1996

SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
62	SWMU	SAA, Building 226	Plating Solution, Metal Hydroxide, Misc. Plating Supplies/Debris	NFI	Building	226	E
23	SWMU	New Plating Shop Wastewater Treatment System	Heavy Metals, Solvents	RFI	Building	226	E
61	SWMU	Less-Than-90-Day Accumulation Area, Building 228	Adhesives	NFI	Building	228	E
48	SWMU	SAA, Building 234	Photo Chemicals, Ammonia, EDTA Containers	NFI	Building	234	C
97	SWMU	Less-Than-90-Day Accumulation Area, Building 236	Petroleum Products, Solvents	CSI	Building	236	E
96	SWMU	Less-Than-90-Day Accumulation Area, Building 236	Petroleum Products, Paint	NFI	Building	236	E
114	SWMU	SAA, Building 241	Petroleum Products	NFI	Building	241	F
111	SWMU	SAA, Building 241	Marine Anti-Foulant Paint, Thinner	NFI	Building	241	F
113	SWMU	SAA, Building 241	Marine Anti-Foulant Paint, Thinner, Petroleum Products	NFI	Building	241	F
112	SWMU	SAA, Building 241	Marine Anti-Foulant Paint, Thinner	NFI	Building	241	F
115	SWMU	SAA, Building 242	Petroleum Products	NFI	Building	242	F
10	SWMU	Hazardous Waste Storage Facility, Building 246	Industrial Wastes	RU	Building	246	G
3	SWMU	Pesticide Mixing Area	Pesticides	RFI	Building	249	G
117	SWMU	SAA, Building 249	Marine Anti-Foulant Paint, Thinner	NFI	Building	249	G
79	SWMU	SAA, Building 250	Hazardous Wastes	NFI	Building	250	E
4	SWMU	Pesticide Storage Building	Pesticides	RFI	Building	381	F

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Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
122	SWMU	SAA, Building 636	Marine Anti-Foulant Paint, Thinner, Grease	NFI	Building	636	H
123	SWMU	SAA, Building 636	Marine Anti-Foulant Paint, Thinner, Grease	NFI	Building	636	H
176	SWMU	Transformer Oil Leak, Near Building 657	PCBs	NFI	Building	657	H
137	SWMU	SAA, Building 675	Photograph Fixer	NFI	Building	657	H
159	SWMU	SAA, Building 665, CNSY Permit #90	Aerosol Cans	RFI	Building	665	H
142	SWMU	Less-Than-90-Day Accumulation Area, Building 681	Paint, Aerosol	NFI	Building	681	I
121	SWMU	SAA, Building 801	VOCs, Metals, Petroleum Products	RFI Investigate w/ SWMU 9	Building	801	H
101	SWMU	Less-Than-90-Day Accumulation Area, Building 1173	Hazardous Waste Accumulation	NFI	Building	1173	E
116	SWMU	SAA, Building 1175	Petroleum Products	NFI	Building	1175	F
81	SWMU	Less-Than-90-Day Accumulation Area, Building 1245	Paint, Trichloroethane	CSI	Building	1245	E
18	SWMU	PCB Spill Area	PCBs	RFI	Building	1278	E
157	SWMU	Less-Than-90-Day Accumulation Area, Building 1278, CNSY Permit #83	Investigation Derived Waste (IDW)	NFI	Building	1278	E
173	SWMU	Building 1297, Storage Area	Lead Zinc Misc. Chemicals Unlabelled Drums	CSI	Building	1297	E
110	SWMU	SAA, Building 1346	Paint, Grease	NFI	Building	1346	F

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Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
124	SWMU	SAA, Building 1508	Marine Anti-Foulant Paint, Thinner, Petroleum Products	NFI	Building	1508	H
105	SWMU	SAA, Building 1518 (Diver's Locker)	Petroleum Products, Marine Anti-Foulant Paint, Thinner	NFI	Building	1518	E
41	SWMU	Battery Charging Station, Building 1624	Lead, Sulfuric Acid	NFI	Building	1624	A
43	SWMU	Publications and Printing Plant, Building 1628	Chromium, Lead	CSI	Building	1628	A
40	SWMU	DRMO, Building 1640	Hazardous Wastes	RU	Building	1640	A
138	SWMU	SAA, Building 1776	VOCs, Waste Oil, Petroleum Products, Antifreeze	CSI	Building	1776	H
107	SWMU	Temporary SAA, CBU-412 Chapel	Lead Paint Removal, Construction Debris	NFI	Chapel	CBU 412	F
1	SWMU	DRMO Storage Area	Hazardous Wastes, Lead	RFI	DRMO		A
2	SWMU	Lead Contaminated Area	Lead	RFI	DRMO		A
75	SWMU	SAA, Drydock #1	Hazardous Wastes	NFI	Drydock	1	E
33	SWMU	Waste Paint Storage Area West End, Drydock #2	Paint, Thinner	NFI	Drydock	2	E
77	SWMU	SAA, Drydock #2	Paint, Hazardous Wastes	NFI	Drydock	2	E
78	SWMU	SAA, Drydock #2	Hazardous Wastes	NFI	Drydock	2	E
106	SWMU	Blast Area in Drydock #3	Blast Residue	RFI	Drydock	3	E
31	SWMU	Waste Paint Storage Area Drydock #5	Paint, Thinner	NFI	Drydock	5	E
103	SWMU	SAA, Drydock #5	Hazardous Waste Storage	NFI	Drydock	5	E

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Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
27	SWMU	Waste Storage Area East End, Pier C	Paint, Thinner	NFI	East End Pier C		E
119	SWMU	Garbage Handling, Facility 1271	Solid Wastes	NFI	End of Building	336	G
193	SWMU	SAA, Building 79A, CNSY Permit #107	Brass Bronze	NFI	Fenced in Area of Building	79 A	E
24	SWMU	Waste Oil Reclamation Facility	Waste Oil	RFI	Fuel Farm Area		G
187	SWMU	SAA, Paint Waste, CNSY Permit #101	Lead Petroleum Products Solvents	NFI	Head of Drydock North Side	5	E
183	SWMU	Less-Than-90-Day Accumulation Area, Building 79A, CNSY Permit #89	Lead Brass Bronze Chromium Cadmium Alcohol	NFI	High Bay Area of Building	79 A	E
184	SWMU	SAA, Building 79A, CNSY Permit #106	Brass Bronze	NFI	High Bay Area of Building	79 A	E
161	SWMU	Vehicle Maintenance Shop, Marine Reserve Center	Petroleum Products	CSI	Naval Annex Building	2505	K
165	SWMU	Painting Operation, MOMAG 11	Paint, Lead	NFI	Naval Annex Building	2556	K
164	SWMU	Blasting Operation, MOMAG 11	Lead, Cadmium	CSI	Naval Annex Building	2556	K
163	SWMU	Concrete Pit Area 10' x 10' x 2' at MOMAG 11	Paint, Spent Solvents, Heavy Metals, Methane	CSI	Naval Annex North of Building	2513	K
162	SWMU	Sludge Drying Field, MOMAG 11	Heavy Metals	CSI	Naval Annex South of Building	2509	K

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Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
167	SWMU	Less-Than-180-Day Accumulation Area, MOMAG 11, CNSY Permit #94	Waste Paints, Petroleum Products, Spent Solvents, Batteries, Heavy Metals, Aerosol Cans	NFI	Naval Annex South of Building	2522	K
39	SWMU	Former POL Drum Storage, Building 1604	Petroleum Products	RFI	North of Building	1604	A
38	SWMU	Miscellaneous Storage, North of Building 1605	Waste Oil	CSI	North of Building	1605	A
17	SWMU	Oil Spill Area	Oil	RFI	North Side of Building	61	H
20	SWMU	Waste Disposal Area	Solid Wastes	RFI	Northeast of Building	903	H
42	SWMU	Former Asphalt Plant and Tanks	Asphalt Products, Solvents, Degreasers	CSI	Northwest of Building	1803	A
7	SWMU	PCB Transformer Storage Yard	PCBs	RFI	Old Corral Southwest of Building	380	G
6	SWMU	Public Works Storage Yard (Old Corral)	Hazardous Wastes, Lead	RFI	Old Corral Southwest of Building	380	G
9	SWMU	Closed Landfill	Industrial Wastes	RFI	Open Area Between Bainbridge and West Road		H
186	SWMU	SAA, Building 58, CNSY Permit #105	Lead Chromium	NFI	Outside of Building	58	C
189	SWMU	SAA, Building 222 Fenced in Area, CNSY Permit #108	Brass Bronze Cadmium	NFI	Outside West End of Building	222	E
8	SWMU	Oil Sludge Pit	Oil Sludges	RFI	Parking Area Southwest of Building	161	G
118	SWMU	Temporary SAA, Pier Z	Marine Anti-Foulant Paint, Thinner	NFI	Pier Z		G
99	SWMU	SAA, Pier G	Marine Anti-Foulant Paint, Thinner	NFI	Pier G		E

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Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
191	SWMU	SAA, Pier G, CNSY Permit #98	Paint and Oil Waste	NFI	Pier G	E
66	SWMU	SAA, Pier C	Paint	NFI	Pier C	E
140	SWMU	Temporary SAA, Pier P	Marine Anti-Foulant Paint, Thinner	NFI	Pier P	I
182	SWMU	SAA, Ships Forces, CNSY Permit #102	Lead Petroleum Products Solvents	NFI	Pier C	E
190	SWMU	SAA, Pier J, CNSY Permit #110	Brass Cadmium Lead	NFI	Pier J	E
98	SWMU	SAA, Pier G	Hazardous Waste Storage	NFI	Pier G	E
153	SWMU	SAA, Pier H, CNSY Permit #91	Marine Anti-Foulant Paint Waste, Thinner	NFI	Pier H	E
120	SWMU	Pier M Laydown	Marine Anti-Foulant Paint, Thinner, Lead	RFI	Pier M	G
154	SWMU	SAA, Pier H, CNSY Permit #80	Waste Oil, Aerosol Cans	NFI	Pier H	E
141	SWMU	Temporary SAA, Pier Q	Marine Anti-Foulant Paint, Thinner	NFI	Pier Q	I
139	SWMU	Former Temporary SAA, Pier P	Marine Anti-Foulant Paint, Thinner	NFI	Pier P	I
147	SWMU	SAA, Pier C, CNSY Permit #79	Waste Oil, Aerosol Cans	NFI	Pier C	E
181	SWMU	SAA, Metal Trades, CNSY Permit #99	Lead Petroleum Products	CSI	Pier C	E
150	SWMU	Braswell Shipyard SAA, Pier Z, CNSY Permit #93	Paint Wastes, Thinner	NFI	Pier Z	G
26	SWMU	Waste Storage Area, Building 64-40, Pier C	Paint, Thinner	NFI	Pier C Building 64 - 40	E

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Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
158	SWMU	SAA, Pier M Quaywall, CNSY Permit #82	Paint Wastes	NFI	Pier M Quaywall		G
160	SWMU	SAA, Port Services, CNSY Permit #95	Waste Oil	NFI	Pier S Quaywall		I
194	SWMU	Building 197, Paint Storage, Naval Short Stay	Paint Waste	NFI	Short Stay, Building	197	K
195	SWMU	Building 207, Flammable Storage, Naval Short Stay	Petroleum Products Solvents	NFI	Short Stay, Building	207	K
175	SWMU	Crane Painting Area, Near Building 1277	Paint Constituents Heavy Metals Lead Acetone Xylenes Toluene	RFI	South of Building	1277	F
15	SWMU	Incinerator	Products of Incomplete Combustion, Paper	RFI	South of Building	1843	H
14	SWMU	Chemical Disposal Area	Decontaminating Agent	RFI	South of Building	1897	H
44	SWMU	Coal Storage Yard	Coal and Coal By-Products	RFI	South Side of Noisette Creek		C
188	SWMU	SAA, Paint Waste, CNSY Permit #103	Lead Petroleum Products Solvents	RFI	South Side of Drydock Midway	5	E
34	SWMU	MWR, Southeast of Building X-10	Refrigerant, Waste Oil	NFI	Southeast of Building	X 10	G
11	SWMU	Caustic Pond	Calcium Hydroxide	RFI	Southeast of Building	190	G
12	SWMU	Old Fire Fighter Training Area	Petroleum	RFI	Southern Tip of Base		I
109	SWMU	Abrasive Blast Media Storage Area	Blast Media	CSI	Structures	1364 1365 1393	F

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Naval Base Charleston
Solid Waste Management Unit Summary - Sorted By Building Location
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SWMU Number	Unit Definition	SWMU Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
145	SWMU	Mercury Spill Area, Building 13A	Mercury	CSI	Under Building 13 A	E
16	SWMU	Paint Storage Bunker	Paint, Thinner	RFI	West of Building X 55	I
19	SWMU	Solid Waste Transfer Station	Solid Wastes	RFI	West of Least Tern Lane	H
28	SWMU	Waste Storage Area West End, Pier C	Paint, Thinner	NFI	West End Pier C	E
185	SWMU	Reserved	—	—	— —	E
104	SWMU	Reserved	—	—	— —	E

APPENDIX A-2
AREA OF CONCERN SUMMARY

Table A-2
Naval Base Charleston
Area of Concern Summary - Sorted By AOC Number
April 1996

AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
500	AOC	UXO Site Between Piers S and T	2 Mark 47 TORPEX Loaded Depth Bombs	CSI Investigate w/EOD Team	Between Piers S and T	J
501	AOC	UXO Site in Cooper River East of Buildings X-54 and X-55	2 Mark 47 TORPEX Loaded Depth Bombs	CSI Investigate w/EOD Team	Cooper River	J
502	AOC	UXO Site Between Piers G and H	Three 5-inch Unexploded Shells at About 40 Feet Below MWL	CSI Investigate w/EOD Team	Between Piers G and H	J
503	AOC	UXO Site South of Building 665	2 Mark 17 Depth Bombs	CSI Investigate w/EOD Team	South of Building 665	H
504	AOC	Railroad System	Petroleum Products Batteries Lead Acids Coal	RFI	Basewide	L
505	AOC	Creosote Cross-Tie/Ballast Storage Area and Golf Course Maintenance Building	Creosote and Degradation Products	RFI	Area of Building 1803	A
506	AOC	Flammable Storage Shelter, Building 1629	Ignitable Materials	CSI	Building 1629	A
507	AOC	Oil Storehouse, Former Building 1010	Petroleum Products	CSI	Golf Course Area 1410	B
508	AOC	Former Incinerator 19	Petroleum Products Metals Polynuclear Aromatic Hydrocarbons	CSI	Between St. Johns and Avenue H	C
509	AOC	Hazardous/Flammable Storage, Building 1079	Ignitable Materials	NFI	Building 1079	C
510	AOC	Laboratory, Building NH-21	Methyl Ethyl Ketone Acetone Methylene Chloride Solvents	CSI	Building NH 21	C
511	AOC	Oil House, Former Building 16	Petroleum Products	CSI	North of Building 762	C

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Naval Base Charleston
Area of Concern Summary - Sorted By AOC Number
April 1996

AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
512	AOC	Former Incinerator 67	Petroleum Products Metals Combustion Products	CSI	Building	1079	C
513	AOC	Former Morgue	Formaldehyde Miscellaneous	CSI	SE of Building	45	C
514	AOC	Flammable Storage, Building 1813	Paint Adhesive Petroleum Products	NFI	Building	1813	C
515	AOC	Incinerator and Paint Shop 51, Building 233 Area	Paints Solvents	CSI	Building	233	C
516	AOC	Wash Area, Building 233	Acid Petroleum Products	RFI	Building	233	C
517	AOC	Indoor Firing Range, Building M-192	Lead	CSI	Building	M 192	C
518	AOC	Coal Storage Bins, Area of Building M-1257	Coal and Coal By-Products	CSI	Adjacent to Building	M 1257	C
519	AOC	Former Boiler House 1081	Petroleum Products	CSI	East of Building	NH 55	C
520	AOC	Garbage House, Former Building M-1051	Solid Wastes	CSI	Adjacent to Building	M 17	C
521	AOC	Oil Storehouse 1052, Facility M-1262	Petroleum Products	NFI	Building	M 1262	C
522	AOC	Grease and Wash Building, Former Building 1252	Petroleum Products	CSI	SW of Building	198	C
523	AOC	Gas Station Storage, Former Building M-1234	Petroleum Products	CSI	Building	198	C
524	AOC	Substation, Building 415A	PCBs	NFI	Building	415 A	D
525	AOC	Paint Shop, Building 223	Paint	RFI—Booth 35 NFI—Booths 36, 37, 38, 63	Building	223	E

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Area of Concern Summary - Sorted By AOC Number
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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
526	AOC	Paint Area, Building 212	Paint	RFI	Building	212	E
527	AOC	Transformer House, Building 24	PCBs Petroleum Products	NFI	Near Building	3	E
528	AOC	Steam Cleaning Shop	Grease Waste Oil Miscellaneous	CSI Investigate w/Sewer System	Building	59	E
529	AOC	Coating and Spray Systems, Building 2A	Aluminum Cleaning Solvents	NFI	Building	2 A	E
530	AOC	Paint and Oil Storage, Building 35	Paints Solvents Petroleum Products	CSI	Building	35	E
531	AOC	Substation and Storage, Building 459	PCBs Petroleum Products	CSI	Building	459	E
532	AOC	Sump Collection Vats, Building 2	Preservatives	NFI	Building	2	E
533	AOC	Substation, Building 460	PCBs Petroleum Products Lead	NFI	Building	460	E
534	AOC	Latrine, Building 27	Organic Wastes Heavy Metals	NFI	Near Building	59	E
535	AOC	Latrine, Building 28	Organic Wastes Heavy Metals	NFI	East of Building	2	E
536	AOC	Substation, Building 460	PCBs Petroleum Products Lead	NFI	Building	460	E
537	AOC	Substation, Building 342	PCBs Petroleum Products	CSI	Building	342	E

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Area of Concern Summary - Sorted By AOC Number
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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
538	AOC	Forge Shop, Building 6	Lead	RFI	Building	6	E
539	AOC	Propeller Shop, Building 6	Zyglo	RFI Investigate w/AOC 538	Building	6	E
540	AOC	Building 226 Plating Plant (Formerly Building 73 Battery Charging)	Heavy Metals	CSI	Building	226	E
541	AOC	Oil Storage Shop, Former Building 38	Petroleum Products	CSI	Between Buildings	6 and 226	E
542	AOC	Old Oxy-Acetylene Plant and Paint Shop, Building 226	Acetylene gas Paints Possible Solvents	CSI	Area of Building Area	226	E
543	AOC	Former Building 1026; Building 226 Plating Plant	Zinc Inorganic Acids	CSI	Building	226	E
544	AOC	Former Pickling Plant, Building 221	Lead	RFI	Building	221	E
545	AOC	Surface Coating Operations, Building 3	Epoxy, Activator	NFI	Building	3	E
546	AOC	Galvanizing/Pickling Shop, Building 1025	Zinc Inorganic Acids	CSI	Between South end of Buildings	56 and 74	E
547	AOC	Fiberglass Shop, Building 5	Fiberglass Process Resins Miscellaneous	NFI	Building	5	E
548	AOC	Hydraulic Elevator, Building 5	Hydraulic Oil	CSI	Building	5	E
549	AOC	Scrap Yard 1054, Building 5	Heavy Metals	RFI	Area of Building	5	E
550	AOC	Boiler House, Former Building 1111	Petroleum Products	CSI	Southwest of Building	62	E
551	AOC	Boilerhouse, Building 1119	Coal By-Products	CSI	Pier	314	E

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Area of Concern Summary - Sorted By AOC Number
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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
552	AOC	Former Galvanizing Shop, Building 1030	Zinc Inorganic Acids	CSI	Northeast corner of Drydock	1	E
553	AOC	Reserved	—	—	—	—	E
554	AOC	Paint Shop, Former Building 1003	Lead Heavy Metals Acetone Xylenes Toluene	CSI	Between Buildings	5 and 44	E
555	AOC	Latrine and Substation, Former Building 29	Organic Wastes Heavy Metals PCBs	CSI	Southeast side of Building	1119	E
556	AOC	Drydock Discharges	Paint Wastes Blast Residue Waste Oils	RFI	Drydocks		E
557	AOC	Latrine, Former Building 1020	Organic Wastes Heavy Metals	NFI	South of Drydock	1	E
558	AOC	Electrical Substation, Building 177	PCBs Petroleum Products	CSI	Building	77	E
559	AOC	Central Power Station, Building 32	Petroleum Products Combustion Products PCBs	RFI	Building	32	E
560	AOC	Disinfector, Building 34	Infectious Wastes	CSI	South of Building	32	E
561	AOC	Substation, Building 451B	PCBs Petroleum Products	RFI	Along Carolina Avenue		E

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Area of Concern Summary - Sorted By AOC Number
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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
562	AOC	Substation, Building 84	PCBs Petroleum Products	CSI	Building	84	E
563	AOC	Locomotive House, Former Building 37	Solvents Degreasers	CSI	Building	177	E
564	AOC	Oil/Water Separator, Building 80	Petroleum Products	CSI	North of Building	80	E
565	AOC	Coal Bin, Former Building 1006	Coal and Coal By-Products	NFI	North of Drydock	5	E
566	AOC	Paint Shop Storage, Building 194	Marine Anti-Foulant Paint Wastes Thinner	CSI	Building	194	E
567	AOC	Substation, Building 75	PCBs Petroleum Products Lead	CSI	East of Building	195	E
568	AOC	Former Latrine, Building 26	Organic Wastes Heavy Metals	NFI	Building	26	E
569	AOC	Gasoline Station and Oil Storage, Former Building 1279	Petroleum Products	RFI	Attached to Southwest Corner of Building	30	E
570	AOC	Former Coal Storage Area	Coal By-Products	RFI Investigate w/AOC 578	Area of Building	1199	E
571	AOC	Paint Shop, Building 177	Marine Anti-Foulant Paint Thinner	RFI-Booth 33 NFI—Booths 31, 32, 34	Building	177	E
572	AOC	Motor Area, Building 177	Petroleum Products	RFI	Building	177	E
573	AOC	Anodizing Process, Building 177	Heavy Metals Acids Degreasers	CSI	Building	177	E

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Area of Concern Summary - Sorted By AOC Number
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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
574	AOC	Fuel Tank, Building 9	Petroleum	RFI	Building	9	E
575	AOC	Substation, Building 454	PCBs Petroleum Products Lead	CSI	Building	454	E
576	AOC	Oil and Paint Storehouse/Print Office, Former Building 1012	Heavy Metals Paints Solvents	CSI	Building	80	E
577	AOC	Paint Booth, Building 25	Paint	NFI	Building	25	E
578	AOC	Transportation Shop and Garage, Building 25	Petroleum Products Lead Solvents	RFI	Building	25	E
579	AOC	Former Paint Shop, Building 1035	Paints Heavy Metals	CSI	Building	1035	E
580	AOC	Former Pattern and Electric Shop, Building 10	Lead Zinc Solvents Degreasers	CSI	Building	10	E
581	AOC	Substation and Radio Lab, Building 20	PCBs	NFI	Northeast of Building	236	E
582	AOC	Substation, Building 455	PCBs Petroleum Products	NFI	Building	455	E
583	AOC	Northeast Corner of Building 236	Freon Petroleum Products	RFI	Northeast Corner of Building	236	E
584	AOC	Substation, Building 451H	PCBs Petroleum Products	NFI	Building	451 H	E

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Area of Concern Summary - Sorted By AOC Number
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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
585	AOC	Latrine and Officers Club Storage, Former Building 36	Organic Wastes Heavy Metals	NFI	East of Drydock	5	E
586	AOC	Temporary Powerhouse, Building 1014	Coal	CSI	Adjacent to Building	11	E
587	AOC	Former Aviation Gas Storage, Building 21	Petroleum Products Lead	NFI	Building	21	E
588	AOC	Paint Booth, Building 218	Paint	NFI	Building	218	E
589	AOC	Substation, Building 85	PCBs Petroleum Products	NFI	Building	85	E
590	AOC	Alley, Buildings 1760 and 79	Acetone Petroleum Products Metals	CSI	Between Buildings	79 and 1760	E
591	AOC	Reserved	—	—	—	—	E
592	AOC	Asbestos Shredding Shelter, Former Building 1225	Asbestos Waste	CSI	South of Building	1760	E
593	AOC	Reserved	—	—	—	—	E
594	AOC	Radcon Training & Offices, Building 190	Paint Petroleum Products	NFI	Building	190	E
595	AOC	Oil & Paint Storehouse, Former Building 1018	Petroleum Products Paints Heavy Metals Solvents	NFI	Southwest of Building	101	E
596	AOC	Former Torpedo Storage, Building 101	Explosives Propellants Solvents/Degreasers	CSI	Building	101	E

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Area of Concern Summary - Sorted By AOC Number
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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
597	AOC	Substation, Building 91	PCBs Petroleum Products Lead	CSI	Building	91	E
598	AOC	Sonar Dome Area, End of Pier J	Blast Residue Marine Anti-Foulant Paint	RFI	End of Pier J		E
599	AOC	Pump House, Pier J	Diesel Fuel	CSI	Pier J		E
600	AOC	Coal and Oil Pier, Former Pier 318-L	Petroleum Products Coal By-Products	NFI	North of Drydock	3	E
601	AOC	Oil Pier, Former Pier 319	Petroleum Products	NFI	South of Pier	317 F	E
602	AOC	Substation and Storage, Building 95	PCBs Petroleum Products	CSI	Building	95	E
603	AOC	Burning Dump, Drydock #3 Area	Solid Wastes, Products of Incomplete Combustion	CSI	Drydock	3	E
604	AOC	Substation and Storage, Building 96	PCBs Petroleum Products	CSI	Building	96	E
605	AOC	Waste Paint Storage Area, Pad 1278	Paint Petroleum Products Lead	RFI investigate w/SWMU 5	Drydock	4	E
606	AOC	Paint Booth, Building 187	Paint	NFI	Building	187	F
607	AOC	Dry Cleaning, Building 1189	Perchloroethylene	RFI	Building	1189	F
608	AOC	Naval Exchange Storage Shed, Building 1263	Petroleum Products	NFI	Building	1263	F
609	AOC	Service Station, Building 1346	Ethylene Glycol Petroleum Products	RFI	Building	1346	F

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
610	AOC	Paint Booth, Building 241	Marine Anti-Foulant Paint Thinner	NFI	Building	241	F
611	AOC	Grease Rack and Hobby Shop, Building 1264	Petroleum Products Solvents Degreasers Lead	CSI	Ninth Street and Enterprise Avenue		F
612	AOC	Substation, Building 94	PCBs Petroleum Products	NFI	Building	94	F
613	AOC	Old Locomotive Repair Shop, Former Building 1169	Petroleum Products Solvents	RFI	Building	242	F
614	AOC	Paint Booth, Building 242	Paint	NFI	Building	242	F
615	AOC	Old Chain Locker, Building 1391	Epoxies Resins	CSI	Building	255	F
616	AOC	Paint Shop, Former Building 1201	Paints Heavy Metals	CSI	Parking Lot Building	69	F
617	AOC	Galvanizing Plant, Former Building 1176	Zinc Inorganic Acids	CSI	Building	69 A	F
618	AOC	Switching Substation, Building 466	PCBs Petroleum Products	NFI	Building	466	F
619	AOC	Former Oil Storage Yard	Petroleum Products	CSI	Area of Buildings	1824 1836 316 381	F
620	AOC	Battery Shop, Building 68	Paint Solvents Petroleum Products	RFI Investigate w/SWMU 36	Building	68	F

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
621	AOC	Battery Cracking Area, Building 68	Lead Acids	RFI investigate w/SWMU 5	Building 68	F
622	AOC	Ballast Water Treatment Facility, Facility 3926	Petroleum Oils Metals	CSI Investigate w/AOC 626	NSC Fuel Farm	G
623	AOC	Concrete Tank, Building 98	Petroleum Products	CSI Investigate w/AOC 626	Building 96	G
624	AOC	Fuel Oil Booster Pumphouse, Building 98	Petroleum Products	RFI	Building 98	G
625	AOC	Sludge Pumphouse, Building 3901B	Petroleum Products	CSI	Building 3901 B	G
626	AOC	Charleston Naval Supply Center Fuel Farm	Petroleum Products Waste Oil	RFI	Fuel Farm Area	G
627	AOC	Oil Spill Area at Hobson Avenue and Viaduct Road	Petroleum Products	RFI	Hobson and Viaduct Roads	G
628	AOC	Sandblasting Area, Southeast Area of Building 68	Paint Blast Residue	CSI	Southeast of Building 68	G
629	AOC	Tank Truck/Car Loading/Unloading Facility	Petroleum Products Waste Oil	CSI Investigate w/AOC 626	Building 3913	G
630	AOC	POL Sampling/Test Building, Building 3914	Petroleum Products	NFI	Building 3913	G
631	AOC	Fueling Pier Kilo (K)	Petroleum Products	RFI	Pier Kilo	G
632	AOC	Substation, Building 124	PCBs Petroleum Products	NFI	Building 124	G
633	AOC	Substation, Building 451C	PCBs Petroleum Products	CSI	Building 451 C	G
634	AOC	Flammable Material Storage, Building 1814	Paint Flammable Material	CSI	Southwest of Building 224	G

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
635	AOC	Paint and Oil Storehouse, Building 3902	PCBs Paints Petroleum Products Solvents Metals	RFI Investigate w/SWMU 6 and 7	Building	3902	G
636	AOC	Torpedo Magazine, Building 161 Area	Explosives Propellants	CSI	Building	161	G
637	AOC	Dump Area, Building 161 Area	Solid and Hazardous Wastes	CSI	Area of Building	161	G
638	AOC	Torpedo Workshop, Building 132	Explosives Propellants	CSI	Building	132	G
639	AOC	Alcohol Storage	Alcohol	NFI	South of Building	132	G
640	AOC	Fuel Oil Pier, Former Pier 322	Petroleum Products	NFI	Pier	336	G
641	AOC	Stripper Pumphouse, Former Building 39-K	Acetone Methylene Chloride	CSI	Base of Building	336	G
642	AOC	Former Pistol Range, Present Parking Lot	Lead Explosives	CSI Investigate w/SWMU 29 and 34	Parking Lot Building	X 10	G
643	AOC	Substation, Building 125	PCBs Petroleum Products	CSI	Building	125	G
644	AOC	Substation, Building 1793	PCBs Petroleum Products Lead	NFI	Building	1793	G
645	AOC	Transformer Vault, Building 3906S	PCBs	NFI	Chicora Tank Farm		G
646	AOC	Operational Storage, Building 3906Q	Petroleum Products	CSI	Chicora Tank Farm		G

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
647	AOC	Transformer Vault, Building 3906R	PCBs	NFI	Chicora Tank Farm		G
648	AOC	Transformer Vault, West of Building 672	PCB Oils	NFI	West of Building	672	H
649	AOC	Braswell Shipyards, Inc. Storage Area	Blast Media Welding Supplies	CSI	East of Building	672	H
650	AOC	Metal Trades, Inc. Storage Area	Information not Available to Identify	CSI	East of Building	672	H
651	AOC	Sandblasters, Inc. Storage Area	Information not Available to Identify	CSI	East of Building	672	H
652	AOC	Paint Booth, Building 636	Marine Anti-Foulant Paint Thinner	NFI	Building	636	H
653	AOC	Hobby Shop, Building 1508	Petroleum Products Automotive Paint Thinner	RFI	Building	1508	H
654	AOC	Septic Tank and Drain Field 1718, Building 661	Solvents Petroleum Products	CSI Investigate W/SWMU 9	Area of Building	661	H
655	AOC	Oil Spill Area, Building 656	Petroleum Products	RFI	Building	656	H
656	AOC	Petroleum Spill Between Buildings 602 and NS-71	Petroleum Products	RFI	Between Buildings	602 and NS 71	H
657	AOC	Engine Overhaul Facility, Building 645	Solvents Degreasers Petroleum Products Chlorofluorocarbons	NFI	Building	645	H
658	AOC	Gas Storage, Building 203	Petroleum Products Flammable gases	NFI	East of Building	1303	H
659	AOC	Diesel Storage, Building 14	Petroleum Products	CSI	Building	14	H

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
660	AOC	Mosquito Control, Former Building 31	Pesticides	CSI	Area Northwest of Building	NS 6	H
661	AOC	Former Explosives Storage	Explosives	CSI	South of Building	601	H
662	AOC	Former Gasoline Station, Building NS-54	Petroleum Products	CSI	Building	NS 54	H
663	AOC	Gas/Diesel Pumping Station, Building 851	Petroleum Products	CSI	Building	851	H
664	AOC	Transformer Vault (X-33A)	PCBs Petroleum Products	NFI	Building	X 33 A	H
665	AOC	Pyrotechnic Storage, Building 159	Pyrotechnic Explosives	CSI	Building	1889 and NS 46	H
666	AOC	Fuel Storage, Building NS-45	Petroleum Products	CSI	By Osprey Street		H
667	AOC	CBU-412 Vehicle Maintenance Area, Building 1776	Petroleum Products	RFI	CBU-412		H
668	AOC	Hazardous Material Storage, Building 1899	Oxygen Acetylene Welding Supplies	NFI	Building	1899	H
669	AOC	Indoor Pistol Range, Building 1888	Lead	NFI	Building	1888	H
670	AOC	Former Skeet Range, South of Building 1897	Lead Brass Shell Casings	RFI Investigate w/SWMU 14	Field South of Building	1897	H
671	AOC	Metering House, Former Building 3905G	Petroleum Products	CSI	North of Hobson		I
672	AOC	Substation, Building 126	PCBs Petroleum Products	RFI	Building	126	I

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Area of Concern Summary - Sorted By AOC Number
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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
673	AOC	Paint and Oil Storehouse, Building 169	Paints Petroleum Products Solvents Metals	CSI	Building	169	I
674	AOC	Paint Storage, Building RTC 4	Paint Petroleum Products Heavy Metals Solvents	NFI	Building	RTC 4	I
675	AOC	Fuel Oil Storage, Building NS-4	Petroleum Products	CSI	Along Thompson Ave.		I
676	AOC	Former Incinerator, Building NS-2	Products of Incomplete Combustion	CSI Investigate w/AOC 677	Area of Building	NS 2	I
677	AOC	Grounds, Building NS-2	Petroleum Products	RFI	Building	NS 2	I
678	AOC	Fire Fighting School, Former Building 2-V	Petroleum Products	CSI	Area of Building	NS 1	I
679	AOC	Former Wash Rack	Paint Petroleum Products	CSI	Area of Building	NS 1	I
680	AOC	Brake Repair and Welding Area, NE Side of Building NS-26	Asbestos Waste	CSI	Building	NS 26	I
681	AOC	Abrasive Blast Booth, Building 681	Blast Residue	RFI	Building	681	I
682	AOC	Spray Booth, Building 681	Paint Wastes Thinner	NFI	Building	681	I
683	AOC	Transformer Vault	PCBs	NFI	Area of Building	678	I
684	AOC	Former Outdoor Pistol Range, Building 1888	Lead	RFI Investigate w/SWMU 14	Building	1888	I
685	AOC	Former Smoke Drum	Products of Incomplete Combustion	CSI	West of Juneau Ave.		I

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
686	AOC	High Explosive Storage, Building X-54	Explosives Lead Petroleum Products	NFI	Building X 54	I
687	AOC	Ammunition Storage, Building X-55	Explosives	CSI	Building X 55	I
688	AOC	Ammunition Storage, Building X-56	Explosives	CSI	Building X 56	I
689	AOC	Southern Tip of Base (Marina Parking Area)	Dioxins	RFI	Southern Tip of Base	I
690	AOC	Dredged Materials Area Road	Solid Wastes	CSI	South End of Base	I
691	AOC	Waterfront	Petroleum Products	RFI	Waterfront	J
692	AOC	Free Product Along Cooper River	Petroleum Products	RFI	Waterfront	J
693	AOC	Fuse and Primer House, Former Building 117	Petroleum Products Reactives	CSI	Clouter Creek Dredge Area	K
694	AOC	Former Naval Ammunition Depot, Building 117	Explosives Heavy Metals	CSI Investigate w/EOD Team	Clouter Creek Dredge Area	K
695	AOC	Electric Locomotive Shed, Former Building 119	Solvents Degreasers	CSI	SW of Building 117	K
696	AOC	Transformer Area Near Building 2509, MOMAG 11	PCBs	CSI	MOMAG 11, Building 2509	K
697	AOC	Transformer Area Near Building 2554, MOMAG 11	PCBs	NFI	MOMAG 11, Building 2554	K
698	AOC	Boiler House, Building 2508, Marine Reserve Training Center, Naval Annex	Lead	RFI	Naval Annex Building 2508	K
699	AOC	Storm Sewer System	Industrial Wastes	RFI	Basewide	L

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
700	AOC	Golf Maintenance Building	Pesticides Petroleum Products	RFI	Building	1646	C
701	AOC	Former McMillan Avenue Gas Station	Petroleum Products	CSI	Building	1141	E
702	AOC	Paint Accumulation, Pier D	Paint Waste	CSI	Pier D		E
703	AOC	Paint Accumulation, Pier F	Paint Waste	CSI	Pier F		E
704	AOC	Paint Accumulation, Building 301B	Paint Waste	CSI	West of Building	301 B	E
705	AOC	Building 58 Spills	X-Ray Developing Chemicals and Mercury	NFI	Building	58	E
706	AOC	Area Behind Building 246	PCBs	RFI	Building	246	G
707	AOC	Diesel Fuel Oil Spill Adjacent to Building 1795	Petroleum Products PAHs	Interim Measure	Next to Building	1795	H
708	AOC	Petroleum Release	Petroleum Products PAHs	Interim Measure	Between Buildings	668 and 669	H

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Area of Concern Summary - Sorted By Building Location
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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
518	AOC	Coal Storage Bins, Area of Building M-1257	Coal and Coal By-Products	CSI	Adjacent to Building	M 1257	C
520	AOC	Garbage House, Former Building M-1051	Solid Wastes	CSI	Adjacent to Building	M 17	C
586	AOC	Temporary Powerhouse, Building 1014	Coal	CSI	Adjacent to Building	11	E
675	AOC	Fuel Oil Storage, Building NS-4	Petroleum Products	CSI	Along Thompson Ave.		I
561	AOC	Substation, Building 451B	PCBs Petroleum Products	RFI	Along Carolina Avenue		E
678	AOC	Fire Fighting School, Former Building 2-V	Petroleum Products	CSI	Area of Building	NS 1	I
676	AOC	Former Incinerator, Building NS-2	Products of Incomplete Combustion	CSI Investigate w/AOC 677	Area of Building	NS 2	I
679	AOC	Former Wash Rack	Paint Petroleum Products	CSI	Area of Building	NS 1	I
549	AOC	Scrap Yard 1054, Building 5	Heavy Metals	RFI	Area of Building	5	E
637	AOC	Dump Area, Building 161 Area	Solid and Hazardous Wastes	CSI	Area of Building	161	G
542	AOC	Old Oxy-Acetylene Plant and Paint Shop, Building 226	Acetylene gas Paints Possible Solvents	CSI	Area of Building	226	E
654	AOC	Septic Tank and Drain Field 1718, Building 661	Solvents Petroleum Products	CSI Investigate W/SWMU 9	Area of Building	661	H
683	AOC	Transformer Vault	PCBs	NFI	Area of Building	678	I
570	AOC	Former Coal Storage Area	Coal By-Products	RFI Investigate w/AOC 578	Area of Building	1199	E
505	AOC	Creosote Cross-Tie/Ballast Storage Area and Golf Course Maintenance Building	Creosote and Degradation Products	RFI	Area of Building	1803	A

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
619	AOC	Former Oil Storage Yard	Petroleum Products	CSI	Area of Buildings	1824 1836 316 381	F
660	AOC	Mosquito Control, Former Building 31	Pesticides	CSI	Area Northwest of Building	NS 6	H
569	AOC	Gasoline Station and Oil Storage, Former Building 1279	Petroleum Products	RFI	Attached to Southwest Corner of Building	30	E
641	AOC	Stripper Pumphouse, Former Building 39-K	Acetone Methylene Chloride	CSI	Base of Building	336	G
699	AOC	Storm Sewer System	Industrial Wastes	RFI	Basewide		L
504	AOC	Railroad System	Petroleum Products Batteries Lead Acids Coal	RFI	Basewide		L
508	AOC	Former Incinerator 19	Petroleum Products Metals Polynuclear Aromatic Hydrocarbons	CSI	Between St. Johns and Avenue H		C
554	AOC	Paint Shop, Former Building 1003	Lead Heavy Metals Acetone Xylenes Toluene	CSI	Between Buildings	5 and 44	E
541	AOC	Oil Storage Shop, Former Building 38	Petroleum Products	CSI	Between Buildings	6 and 226	E

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
590	AOC	Alley, Buildings 1760 and 79	Acetone Petroleum Products Metals	CSI	Between Buildings	79 and 1760	E
656	AOC	Petroleum Spill Between Buildings 602 and NS-71	Petroleum Products	RFI	Between Buildings	602 and NS 71	H
708	AOC	Petroleum Release	Petroleum Products PAHs	Interim Measure	Between Buildings	668 and 669	H
546	AOC	Galvanizing/Pickling Shop, Building 1025	Zinc Inorganic Acids	CSI	Between South End of Buildings	56 and 74	E
502	AOC	UXO Site Between Piers G and H	Three 5-inch Unexploded Shells at About 40 Feet Below MWL	CSI Investigate w/EOD Team	Between Piers G and H		J
500	AOC	UXO Site Between Piers S and T	2 Mark 47 TORPEX Loaded Depth Bombs	CSI Investigate w/EOD Team	Between Piers S and T		J
517	AOC	Indoor Firing Range, Building M-192	Lead	CSI	Building	M 192	C
521	AOC	Oil Storehouse 1052, Facility M-1262	Petroleum Products	NFI	Building	M 1262	C
510	AOC	Laboratory, Building NH-21	Methyl Ethyl Ketone Acetone Methylene Chloride Solvents	CSI	Building	NH 21	C
662	AOC	Former Gasoline Station, Building NS-54	Petroleum Products	CSI	Building	NS 54	H
680	AOC	Brake Repair and Welding Area, NE Side of Building NS-26	Asbestos Waste	CSI	Building	NS 26	I

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
677	AOC	Grounds, Building NS-2	Petroleum Products	RFI	Building	NS 2	I
674	AOC	Paint Storage, Building RTC 4	Paint Petroleum Products Heavy Metals Solvents	NFI	Building	RTC 4	I
687	AOC	Ammunition Storage, Building X-55	Explosives	CSI	Building	X 55	I
686	AOC	High Explosive Storage, Building X-54	Explosives Lead Petroleum Products	NFI	Building	X 54	I
664	AOC	Transformer Vault (X-33A)	PCBs Petroleum Products	NFI	Building	X 33 A	H
688	AOC	Ammunition Storage, Building X-56	Explosives	CSI	Building	X 56	I
532	AOC	Sump Collection Vats, Building 2	Preservatives	NFI	Building	2	E
529	AOC	Coating and Spray Systems, Building 2A	Aluminum Cleaning Solvents	NFI	Building	2 A	E
545	AOC	Surface Coating Operations, Building 3	Epoxy, Activator	NFI	Building	3	E
547	AOC	Fiberglass Shop, Building 5	Fiberglass Process Resins Miscellaneous	NFI	Building	5	E
548	AOC	Hydraulic Elevator, Building 5	Hydraulic Oil	CSI	Building	5	E
539	AOC	Propeller Shop, Building 6	Zyglo	RFI Investigate w/AOC 538	Building	6	E
538	AOC	Forge Shop, Building 6	Lead	RFI	Building	6	E
574	AOC	Fuel Tank, Building 9	Petroleum	RFI	Building	9	E

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
580	AOC	Former Pattern and Electric Shop, Building 10	Lead Zinc Solvents Degreasers	CSI	Building	10	E
659	AOC	Diesel Storage, Building 14	Petroleum Products	CSI	Building	14	H
587	AOC	Former Aviation Gas Storage, Building 21	Petroleum Products Lead	NFI	Building	21	E
578	AOC	Transportation Shop and Garage, Building 25	Petroleum Products Lead Solvents	RFI	Building	25	E
577	AOC	Paint Booth, Building 25	Paint	NFI	Building	25	E
568	AOC	Former Latrine, Building 26	Organic Wastes Heavy Metals	NFI	Building	26	E
559	AOC	Central Power Station, Building 32	Petroleum Products Combustion Products PCBs	RFI	Building	32	E
530	AOC	Paint and Oil Storage, Building 35	Paints Solvents Petroleum Products	CSI	Building	35	E
705	AOC	Building 58 Spills	X-Ray Developing Chemicals and Mercury	NFI	Building	58	E
528	AOC	Steam Cleaning Shop	Grease Waste Oil Miscellaneous	CSI Investigate w/Sewer System	Building	59	E

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
620	AOC	Battery Shop, Building 68	Paint Solvents Petroleum Products	RFI Investigate w/SWMU 36	Building	68	F
621	AOC	Battery Cracking Area, Building 68	Lead Acids	RFI investigate w/SWMU 5	Building	68	F
617	AOC	Galvanizing Plant, Former Building 1176	Zinc Inorganic Acids	CSI	Building	69 A	F
558	AOC	Electrical Substation, Building 177	PCBs Petroleum Products	CSI	Building	77	E
576	AOC	Oil and Paint Storehouse/Print Office, Former Building 1012	Heavy Metals Paints Solvents	CSI	Building	80	E
562	AOC	Substation, Building 84	PCBs Petroleum Products	CSI	Building	84	E
589	AOC	Substation, Building 85	PCBs Petroleum Products	NFI	Building	85	E
597	AOC	Substation, Building 91	PCBs Petroleum Products Lead	CSI	Building	91	E
612	AOC	Substation, Building 94	PCBs Petroleum Products	NFI	Building	94	F
602	AOC	Substation and Storage, Building 95	PCBs Petroleum Products	CSI	Building	95	E
604	AOC	Substation and Storage, Building 96	PCBs Petroleum Products	CSI	Building	96	E

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
623	AOC	Concrete Tank, Building 98	Petroleum Products	CSI Investigate w/AOC 626	Building	96	G
624	AOC	Fuel Oil Booster Pumphouse, Building 98	Petroleum Products	RFI	Building	98	G
596	AOC	Former Torpedo Storage, Building 101	Explosives Propellants Solvents/Degreasers	CSI	Building	101	E
632	AOC	Substation, Building 124	PCBs Petroleum Products	NFI	Building	124	G
643	AOC	Substation, Building 125	PCBs Petroleum Products	CSI	Building	125	G
672	AOC	Substation, Building 126	PCBs Petroleum Products	RFI	Building	126	I
638	AOC	Torpedo Workshop, Building 132	Explosives Propellants	CSI	Building	132	G
636	AOC	Torpedo Magazine, Building 161 Area	Explosives Propellants	CSI	Building	161	G
673	AOC	Paint and Oil Storehouse, Building 169	Paints Petroleum Products Solvents Metals	CSI	Building	169	I
572	AOC	Motor Area, Building 177	Petroleum Products	RFI	Building	177	E
563	AOC	Locomotive House, Former Building 37	Solvents Degreasers	CSI	Building	177	E

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
571	AOC	Paint Shop, Building 177	Marine Anti-Foulant Paint Thinner	RFI-Booth 33 NFI—Booths 31, 32, 34	Building	177	E
573	AOC	Anodizing Process, Building 177	Heavy Metals Acids Degreasers	CSI	Building	177	E
606	AOC	Paint Booth, Building 187	Paint	NFI	Building	187	F
594	AOC	Radcon Training & Offices, Building 190	Paint Petroleum Products	NFI	Building	190	E
566	AOC	Paint Shop Storage, Building 194	Marine Anti-Foulant Paint Wastes Thinner	CSI	Building	194	E
523	AOC	Gas Station Storage, Former Building M-1234	Petroleum Products	CSI	Building	198	C
526	AOC	Paint Area, Building 212	Paint	RFI	Building	212	E
588	AOC	Paint Booth, Building 218	Paint	NFI	Building	218	E
544	AOC	Former Pickling Plant, Building 221	Lead	RFI	Building	221	E
525	AOC	Paint Shop, Building 223	Paint	RFI—Booth 35 NFI—Booths 36, 37, 38, 63	Building	223	E
543	AOC	Former Building 1026; Building 226 Plating Plant	Zinc Inorganic Acids	CSI	Building	226	E
540	AOC	Building 226 Plating Plant (Formerly Building 73 Battery Charging)	Heavy Metals	CSI	Building	226	E
516	AOC	Wash Area, Building 233	Acid Petroleum Products	RFI	Building	233	C

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
515	AOC	Incinerator and Paint Shop 51, Building 233 Area	Paints Solvents	CSI	Building	233	C
610	AOC	Paint Booth, Building 241	Marine Anti-Foulant Paint Thinner	NFI	Building	241	F
613	AOC	Old Locomotive Repair Shop, Former Building 1169	Petroleum Products Solvents	RFI	Building	242	F
614	AOC	Paint Booth, Building 242	Paint	NFI	Building	242	F
706	AOC	Area Behind Building 246	PCBs	RFI	Building	246	G
615	AOC	Old Chain Locker, Building 1391	Epoxies Resins	CSI	Building	255	F
537	AOC	Substation, Building 342	PCBs Petroleum Products	CSI	Building	342	E
524	AOC	Substation, Building 415A	PCBs	NFI	Building	415 A	D
584	AOC	Substation, Building 451H	PCBs Petroleum Products	NFI	Building	451 H	E
633	AOC	Substation, Building 451C	PCBs Petroleum Products	CSI	Building	451 C	G
575	AOC	Substation, Building 454	PCBs Petroleum Products Lead	CSI	Building	454	E
582	AOC	Substation, Building 455	PCBs Petroleum Products	NFI	Building	455	E
531	AOC	Substation and Storage, Building 459	PCBs Petroleum Products	CSI	Building	459	E

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AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
536	AOC	Substation, Building 460	PCBs Petroleum Products Lead	NFI	Building	460	E
533	AOC	Substation, Building 460	PCBs Petroleum Products Lead	NFI	Building	460	E
618	AOC	Switching Substation, Building 466	PCBs Petroleum Products	NFI	Building	466	F
652	AOC	Paint Booth, Building 636	Marine Anti-Foulant Paint Thinner	NFI	Building	636	H
657	AOC	Engine Overhaul Facility, Building 645	Solvents Degreasers Petroleum Products Chlorofluorocarbons	NFI	Building	645	H
655	AOC	Oil Spill Area, Building 656	Petroleum Products	RFI	Building	656	H
682	AOC	Spray Booth, Building 681	Paint Wastes Thinner	NFI	Building	681	I
681	AOC	Abrasive Blast Booth, Building 681	Blast Residue	RFI	Building	681	I
663	AOC	Gas/Diesel Pumping Station, Building 851	Petroleum Products	CSI	Building	851	H
579	AOC	Former Paint Shop, Building 1035	Paints Heavy Metals	CSI	Building	1035	E
512	AOC	Former Incinerator 67	Petroleum Products Metals Combustion Products	CSI	Building	1079	C
509	AOC	Hazardous/Flammable Storage, Building 1079	Ignitable Materials	NFI	Building	1079	C

Table A-2a
Naval Base Charleston
Area of Concern Summary - Sorted By Building Location
April 1996

AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
701	AOC	Former McMillan Avenue Gas Station	Petroleum Products	CSI	Building	1141	E
607	AOC	Dry Cleaning, Building 1189	Perchloroethylene	RFI	Building	1189	F
608	AOC	Naval Exchange Storage Shed, Building 1263	Petroleum Products	NFI	Building	1263	F
609	AOC	Service Station, Building 1346	Ethylene Glycol Petroleum Products	RFI	Building	1346	F
653	AOC	Hobby Shop, Building 1508	Petroleum Products Automotive Paint Thinner	RFI	Building	1508	H
506	AOC	Flammable Storage Shelter, Building 1629	Ignitable Materials	CSI	Building	1629	A
700	AOC	Golf Maintenance Building	Pesticides Petroleum Products	RFI	Building	1646	C
644	AOC	Substation, Building 1793	PCBs Petroleum Products Lead	NFI	Building	1793	G
514	AOC	Flammable Storage, Building 1813	Paint Adhesive Petroleum Products	NFI	Building	1813	C
669	AOC	Indoor Pistol Range, Building 1888	Lead	NFI	Building	1888	H
684	AOC	Former Outdoor Pistol Range, Building 1888	Lead	RFI Investigate w/SWMU 14	Building	1888	I
665	AOC	Pyrotechnic Storage, Building 159	Pyrotechnic Explosives	CSI	Building	1889 and NS 46	H

Table A-2a
Naval Base Charleston
Area of Concern Summary - Sorted By Building Location
April 1996

AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
668	AOC	Hazardous Material Storage, Building 1899	Oxygen Acetylene Welding Supplies	NFI	Building 1899	H
625	AOC	Sludge Pumphouse, Building 3901B	Petroleum Products	CSI	Building 3901 B	G
635	AOC	Paint and Oil Storehouse, Building 3902	PCBs Paints Petroleum Products Solvents Metals	RFI Investigate w/SWMU 6 and 7	Building 3902	G
630	AOC	POL Sampling/Test Building, Building 3914	Petroleum Products	NFI	Building 3913	G
629	AOC	Tank Truck/Car Loading/Unloading Facility	Petroleum Products Waste Oil	CSI Investigate w/AOC 626	Building 3913	G
666	AOC	Fuel Storage, Building NS-45	Petroleum Products	CSI	By Osprey Street	H
667	AOC	CBU-412 Vehicle Maintenance Area, Building 1776	Petroleum Products	RFI	CBU-412	H
647	AOC	Transformer Vault, Building 3906R	PCBs	NFI	Chicora Tank Farm	G
646	AOC	Operational Storage, Building 3906Q	Petroleum Products	CSI	Chicora Tank Farm	G
645	AOC	Transformer Vault, Building 3906S	PCBs	NFI	Chicora Tank Farm	G
694	AOC	Former Naval Ammunition Depot, Building 117	Explosives Heavy Metals	CSI Investigate w/EOD Team	Clouter Creek Dredge Area	K
693	AOC	Fuse and Primer House, Former Building 117	Petroleum Products Reactives	CSI	Clouter Creek Dredge Area	K
501	AOC	UXO Site in Cooper River East of Buildings X-54 and X-55	2 Mark 47 TORPEX Loaded Depth Bombs	CSI Investigate w/EOD Team	Cooper River	J

Table A-2a
Naval Base Charleston
Area of Concern Summary - Sorted By Building Location
April 1996

AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
603	AOC	Burning Dump, Drydock #3 Area	Solid Wastes, Products of Incomplete Combustion	CSI	Drydock	3	E
605	AOC	Waste Paint Storage Area, Pad 1278	Paint Petroleum Products Lead	RFI investigate w/SWMU 5	Drydock	4	E
556	AOC	Drydock Discharges	Paint Wastes Blast Residue Waste Oils	RFI	Drydocks		E
519	AOC	Former Boiler House 1081	Petroleum Products	CSI	East of Building	NH 55	C
535	AOC	Latrine, Building 28	Organic Wastes Heavy Metals	NFI	East of Building	2	E
567	AOC	Substation, Building 75	PCBs Petroleum Products Lead	CSI	East of Building	195	E
649	AOC	Braswell Shipyards, Inc. Storage Area	Blast Media Welding Supplies	CSI	East of Building	672	H
651	AOC	Sandblasters, Inc. Storage Area	Information not Available to Identify	CSI	East of Building	672	H
650	AOC	Metal Trades, Inc. Storage Area	Information not Available to Identify	CSI	East of Building	672	H
658	AOC	Gas Storage, Building 203	Petroleum Products Flammable gases	NFI	East of Building	1303	H
585	AOC	Latrine and Officers Club Storage, Former Building 36	Organic Wastes Heavy Metals	NFI	East of Drydock	5	E
598	AOC	Sonar Dome Area, End of Pier J	Blast Residue Marine Anti-Foulant Paint	RFI	End of Pier J		E

Table A-2a
Naval Base Charleston
Area of Concern Summary - Sorted By Building Location
April 1996

AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
670	AOC	Former Skeet Range, South of Building 1897	Lead Brass Shell Casings	RFI Investigate w/SWMU 14	Field South of Building 1897	H
626	AOC	Charleston Naval Supply Center Fuel Farm	Petroleum Products Waste Oil	RFI	Fuel Farm Area	G
507	AOC	Oil Storehouse, Former Building 1010	Petroleum Products	CSI	Golf Course Area 1410	B
627	AOC	Oil Spill Area at Hobson Avenue and Viaduct Road	Petroleum Products	RFI	Hobson and Viaduct Roads	G
696	AOC	Transformer Area Near Building 2509, MOMAG 11	PCBs	CSI	MOMAG 11, Building 2509	K
697	AOC	Transformer Area Near Building 2554, MOMAG 11	PCBs	NFI	MOMAG 11, Building 2554	K
698	AOC	Boiler House, Building 2508, Marine Reserve Training Center, Naval Annex	Lead	RFI	Naval Annex Building 2508	K
527	AOC	Transformer House, Building 24	PCBs Petroleum Products	NFI	Near Building 3	E
534	AOC	Latrine, Building 27	Organic Wastes Heavy Metals	NFI	Near Building 59	E
707	AOC	Diesel Fuel Oil Spill Adjacent to Building 1795	Petroleum Products PAHs	Interim Measure	Next to Building 1795	H
611	AOC	Grease Rack and Hobby Shop, Building 1264	Petroleum Products Solvents Degreasers Lead	CSI	Ninth Street and Enterprise Avenue	F
564	AOC	Oil/Water Separator, Building 80	Petroleum Products	CSI	North of Building 80	E
511	AOC	Oil House, Former Building 16	Petroleum Products	CSI	North of Building 762	C

Table A-2a
Naval Base Charleston
Area of Concern Summary - Sorted By Building Location
April 1996

AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
600	AOC	Coal and Oil Pier, Former Pier 318-L	Petroleum Products Coal By-Products	NFI	North of Drydock	3	E
565	AOC	Coal Bin, Former Building 1006	Coal and Coal By-Products	NFI	North of Drydock	5	E
671	AOC	Metering House, Former Building 3905G	Petroleum Products	CSI	North of Hobson		I
581	AOC	Substation and Radio Lab, Building 20	PCBs	NFI	Northeast of Building	236	E
552	AOC	Former Galvanizing Shop, Building 1030	Zinc Inorganic Acids	CSI	Northeast Corner of Drydock	1	E
583	AOC	Northeast Corner of Building 236	Freon Petroleum Products	RFI	Northeast Corner of Building	236	E
622	AOC	Ballast Water Treatment Facility, Facility 3926	Petroleum Oils Metals	CSI Investigate w/AOC 626	NSC Fuel Farm		G
642	AOC	Former Pistol Range, Present Parking Lot	Lead Explosives	CSI Investigate w/SWMU 29 and 34	Parking Lot Building	X 10	G
616	AOC	Paint Shop, Former Building 1201	Paints Heavy Metals	CSI	Parking Lot Building	69	F
702	AOC	Paint Accumulation, Pier D	Paint Waste	CSI	Pier D		E
703	AOC	Paint Accumulation, Pier F	Paint Waste	CSI	Pier F		E
631	AOC	Fueling Pier Kilo (K)	Petroleum Products	RFI	Pier Kilo		G
599	AOC	Pump House, Pier J	Diesel Fuel	CSI	Pier J		E
551	AOC	Boilerhouse, Building 1119	Coal By-Products	CSI	Pier	314	E
640	AOC	Fuel Oil Pier, Former Pier 322	Petroleum Products	NFI	Pier	336	G

Table A-2a
Naval Base Charleston
Area of Concern Summary - Sorted By Building Location
April 1996

AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location		Study Zone
560	AOC	Disinfector, Building 34	Infectious Wastes	CSI	South of Building	32	E
639	AOC	Alcohol Storage	Alcohol	NFI	South of Building	132	G
661	AOC	Former Explosives Storage	Explosives	CSI	South of Building	601	H
503	AOC	UXO Site South of Building 665	2 Mark 17 Depth Bombs	CSI Investigate w/EOD Team	South of Building	665	H
592	AOC	Asbestos Shredding Shelter, Former Building 1225	Asbestos Waste	CSI	South of Building	1760	E
557	AOC	Latrine, Former Building 1020	Organic Wastes Heavy Metals	NFI	South of Drydock	1	E
690	AOC	Dredged Materials Area Road	Solid Wastes	CSI	South End of Base		I
601	AOC	Oil Pier, Former Pier 319	Petroleum Products	NFI	South of Pier	317 F	E
513	AOC	Former Morgue	Formaldehyde Miscellaneous	CSI	Southeast of Building	45	C
628	AOC	Sandblasting Area, Southeast Area of Building 68	Paint Blast Residue	CSI	Southeast of Building	68	G
555	AOC	Latrine and Substation, Former Building 29	Organic Wastes Heavy Metals PCBs	CSI	Southeast Side of Building	1119	E
689	AOC	Southern Tip of Base (Marina Parking Area)	Dioxins	RFI	Southern Tip of Base		I
550	AOC	Boiler House, Former Building 1111	Petroleum Products	CSI	Southwest of Building	62	E

Table A-2a
Naval Base Charleston
Area of Concern Summary - Sorted By Building Location
April 1996

AOC Number	Unit Definition	AOC Name	Materials Released, Stored, or Disposed	Investigative Approach	Location	Study Zone
595	AOC	Oil & Paint Storehouse, Former Building 1018	Petroleum Products Paints Heavy Metals Solvents	NFI	Southwest of Building 101	E
695	AOC	Electric Locomotive Shed, Former Building 119	Solvents Degreasers	CSI	Southwest of Building 117	K
522	AOC	Grease and Wash Building, Former Building 1252	Petroleum Products	CSI	Southwest of Building 198	C
634	AOC	Flammable Material Storage, Building 1814	Paint Flammable Material	CSI	Southwest of Building 224	G
692	AOC	Free Product Along Cooper River	Petroleum Products	RFI	Waterfront	J
691	AOC	Waterfront	Petroleum Products	RFI	Waterfront	J
704	AOC	Paint Accumulation, Building 301B	Paint Waste	CSI	West of Building 301 B	E
648	AOC	Transformer Vault, West of Building 672	PCB Oils	NFI	West of Building 672	H
685	AOC	Former Smoke Drum	Products of Incomplete Combustion	CSI	West of Juneau Ave.	I
593	AOC	Reserved	—	—	— —	E
591	AOC	Reserved	—	—	— —	E
553	AOC	Reserved	—	—	— —	E

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APPENDIX B
ZONE MAPS

APPENDIX C

RESUMES OF KEY PERSONNEL

JOHN H. BOROWSKI, CIH, CSP
MANAGER, HEALTH AND SAFETY SERVICES GROUP

EDUCATION: B.S., Biochemistry, Northern Michigan University, Marquette, Michigan, 1984

CERTIFICATIONS: Certified Industrial Hygienist, American Board of Industrial Hygiene, Certification #5098.

Certified Safety Professional, Board of Certified Safety Professionals, Certification #12486

EPA/Illinois Certified Asbestos Project Supervisor, 1994

SUMMARY OF QUALIFICATIONS

- Mr. Borowski has eleven years progressive responsibility in a wide variety of health and safety programs. As project manager for investigation and decontamination projects in locations such as Boston, New York City, Chicago, and San Francisco, Mr. Borowski gained valuable experience in the coordination and direction of personnel, contractors, and fiscal resources in the performance of large scale asbestos abatement, indoor air quality and industrial hygiene projects. Mr. Borowski has demonstrated his ability as an effective and pragmatic leader for EnSafe through development and implementation of comprehensive health and safety policies and programs including elevating the consciences of EnSafe professionals regarding planning for safe work practices.

- Mr. Borowski has functioned as site health and safety officer at may of EnSafe's most challenging sites including the Fort Hartford Mine Superfund Site, Stamina Mills Superfund Site, and in the on-going investigation of the heavy industrial areas at Charleston Naval Shipyard. Mr. Borowski has demonstrated expertise in measurement of airborne contaminants including air pollutant source sampling, indoor air quality, and ambient air and employee exposure monitoring for particulate and organic vapors. With his experience in construction, demolition and decontamination activities, Mr. Borowski has gained working knowledge of building mechanical and structural systems and has developed and implemented effective site safety programs for projects ranging from fire-damaged building decontamination and demolition, to mechanical system decontamination in commercial office environments. Mr. Borowski has demonstrated international and domestic expertise in the audit and assessment of industrial hygiene and safety policies and programs in

diverse industries such as petroleum refining, chemical production and blending, medical instrument and equipment manufacture, and amusement parks.

EXPERIENCE:

- **Buckman Laboratories; Memphis, TN.** Performed a comprehensive health and safety program assessment. The assessment focused on manufacturing and manufacturing support operations at each facility, with emphasis on the safety and health programs required by federal and state Occupational Safety and Health Administration (OSHA) regulations. EnSafe evaluated how Buckman's safety department implemented the requirements of the standards including evaluation of written programs, the systems used for training and documenting those efforts for compliance purposes.

- **General Electric; Selmer, TN.** Evaluated a worker exposure assessment monitoring program for a large electrical equipment manufacturing facility. Compiled an Exposure Assessment Monitoring Guidelines Document which provided the plant with comprehensive guidance for risk identification and assessment through industrial hygiene monitoring and medical surveillance.

- **Buckman Laboratories; Memphis, TN.** Developed a worker exposure assessment program for a producer of specialty chemicals. Activities included determining frequency of use, process configuration with respect to worker tasks, and the likelihood of exposure to specific chemicals. The exposure assessment program provided facility safety personnel and management guidance for evaluating worker chemical exposures.

- **Smith and Nephew; Largo, FL, Massillon, OH, Carlsbad, CA, Ortez, France, Tuttlingen, Germany.** Completed health and safety compliance audits for a major medical supply manufacturer. Processes reviewed include machining of artificial implant parts (hips and knees), continuous surgical glove dip process manufacture, and manufacture of custom knee braces. Reviewed processes for physical and chemical hazards to worker population including identification of operations with applicable compliance standards, evaluation of existing programs with respect to standards, and preparation of a compliance report with appropriate programs and guidance for maintaining compliance.

- **Helena Chemical; Memphis, TN.** Assisted a client pesticide and herbicide manufacturer in maintaining compliance with the 1988 Uniform Fire Code, Article 80, Hazardous Materials. Evaluated facility conditions, and provided a plan for upgrading the facility with respect to environmental controls, storage conditions, and a specific fire protection plan.

- **W.M. Barr Company; Memphis, TN.** Provided technical expertise in the implementation of a computerized materials safety data sheet (MSDS) system for a client company who specializes in solvent blending. Primary aspect of the project included review of information on product container labels and in MSDS sections regarding fire and explosion data, health hazard data, reactivity data, and spill and leak procedures.

SITE SAFETY PROJECTS

- **Client Confidential; Stamina Mills (USEPA Superfund Site).** Developed and implemented the health and safety plan for all activities performed at this site including investigation and sampling of fire damaged building debris, demolition of buildings and smoke stack as part of remediation, excavation and consolidation of landfill materials, and installation of soil and groundwater remediation systems.

- **Barmet Aluminum; Ft. Hartford Mine Site (USEPA Superfund Site).** Performed health and safety audits relative to OSHA and MSHA requirements in accordance with SARA Title I Audit Guidelines. Critiqued mine entry, decontamination, and emergency response procedures during actual mine entries.

  Developed and implemented the permit-required confined space entry program for the Ft. Hartford mine site. Implementation of the program involved training on recognition of hazardous conditions, air monitoring, pre-entry training, completing permits, and emergency procedures.

  Performed 8-Hour Refresher and Supervisors HAZWOPER training in accordance with 29 CFR 1910.120 for hazardous waste site personnel. Topics included employee/employer rights and responsibilities, hazard communication, permit-required confined space entry, lock out/tag out, respiratory protection, incident command systems, and safe work practices.

- **ServiceMaster Disaster Recovery Services.** Developed and performed a 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training course for disaster recovery personnel. The elements of the course consisted of an OSHA regulatory overview, hazard communication, toxicology, air monitoring and air sampling instrumentation, EPA overview, confined space entry, personal protective equipment, first aid, bloodborne pathogens, accident reporting, lockout/tagout, and a spill response exercise using supplied-air and SCBA equipment.

- **United States Navy; Southern Division Engineering Command.** Developed and implemented site-specific health and safety plans for RECRA and CERCLA environmental investigations of Naval facilities in Tennessee, Florida, South Carolina, Virginia, Louisiana, and Texas. Performed health and safety audits for field operations in accordance with SARA Title I Audit Guidelines.

INDOOR AIR QUALITY

- **Helena Chemical, Memphis, TN.** Performed a comprehensive indoor air quality study of a high-rise office building in Memphis, TN. Purpose of study was to identify and measure potential toxins and irritants (chemical and microbial) in response to tenant complaints. Study indicated need for improved mechanical system maintenance procedures and additional fresh air.

- **Client Confidential, Los Angeles.** Performed a comprehensive indoor air quality study of a high-rise office building in Los Angeles, CA. Purpose of study was to identify and measure potential toxins and irritants (chemical and microbial) in response to tenant complaints. Subsequent report recommended remediation and prevention procedures including microbial and fungal decontamination of HVAC systems and building operations and maintenance programs.

- **44 Montgomery; Heitman Properties, San Francisco, CA.** Completed a baseline indoor air quality assessment of a 40-story office complex in San Francisco, CA. Purpose of assessment was to define quality of air provided by building HVAC systems. Subsequent report was used by building management in tenant development and relations.

- **United States Navy, Southern Division Engineering Command.** Provided guidance for evaluation of radon gas measurements collected from structures located on numerous naval facilities. The evaluations were used in the compilation of Environmental Baseline Surveys for Base Realignment and Closure (BRAC) activities.

- **United States Navy, Southern Division Engineering Command.** Participated in the design and implementation of an indoor air quality study at a naval facility in which facility personnel complained of musty odors and poor health. The study made use of highly sensitive sample collection and analytical techniques which provide data on ambient air contaminants in extremely low concentrations.

- **Terminix Pest Control, Memphis, TN.** Performed an indoor air quality assessment for microbiological organisms for a major U.S. airline's reservations office. Conducted interviews with key management and administrative personnel, collected bioaerosol and surface samples, and interpreted data in the development of appropriate remedial actions.

- **ServiceMaster Disaster Recovery Services, Memphis, TN.** Provided disaster recovery health and safety consultation for manufacturing facilities affected by the Midwest floods. Developed work plans, provided training, implemented air monitoring protocols, and performed an indoor air quality assessment to determine appropriate methodology for remediation of molds and fungus.

DAVID ISENBERG, CIH
SENIOR INDUSTRIAL HYGIENIST

EDUCATION: M.S.P.H., Industrial Hygiene and Safety, University of Washington/1984

B.S., Environmental Health, Western Washington University/1980

CERTIFICATIONS: Certified Industrial Hygienist, American Board of Industrial Hygiene, Certification # 4673

SUMMARY OF QUALIFICATIONS

- Mr. Isenberg is a Certified Industrial Hygienist (CIH) with a Master of Science in Public Health (MSPH) degree. He has provided industrial hygiene consulting services since 1980. He experience includes providing consulting services on three continents: Europe, South America and North America, including most of the 50 states in America. Areas of expertise include: corporate health and safety program assessment and development; occupational health and safety compliance audits and assessments; indoor air quality investigations; asbestos; industrial hygiene surveys; environmental hygiene surveys and the development and implementation of health and safety plans to support environmental investigations and remediation activities. In addition Mr. Isenberg has served and continues to serve on American Industrial Hygiene Association (AIHA) committees including: Occupational Health Standards Committee, the Americas Subcommittee of the International Affairs Committee, and the Construction Safety Task Force (Committee status pending).

EXPERIENCE

Health and Safety Program Assessment and Development

- For a major South American oil company, visited its refineries, production fields, pipelines and distribution terminals in order to compare its health, safety and environmental practices with American and International regulations, policies and practices. Identified health, safety and environmental strengths and weaknesses, recommended corrective actions for observed high risk practices and recommended organizational changes, staff additions and staff reductions.

- Managed an evaluation of the health and safety liabilities associated with a multi-national corporation's manufacturing facilities. A total of 12 sites, located in six countries were evaluated. Personally conducted site investigations in Brazil, Canada and the United States.

- Reviewed emergency response procedures and training program for the Panama Canal Commission. Evaluated the commission's preparedness to respond to and control a release of toxic chemicals anywhere within the canal zone. Recommended the facility adopt an Emergency Response Model, identified organizational and staffing changes necessary to implement the model, and developed a list of emergency response equipment to have on-hand.

- Examined the Health and Safety Program of a large shipbuilder including their management, organization, staffing and effectiveness of specific management systems such as respiratory protection, hazard communication, lead control, hearing conservation and asbestos management.

COMPLIANCE AUDITS

- A member of over 40 corporate environmental health and safety compliance audits. Audited facility operations and evaluated their compliance with international, federal and state regulations; corporate requirements and directives; and industry standards. Audited facilities in North, Central and South America; audited industries include: chemical manufacturing, petroleum refining and production, smelting, aerospace and automotive parts manufacturing, shipbuilding, paper manufacturing, tropical fruit plantations and shipping terminals and hospitals and research facilities.

- For the Department of Energy Mr. Isenberg was a member of two "Tiger Team" environmental compliance audits. Mr. Isenberg was responsible for reviewing the facility's program for identifying and managing inactive waste sites that were or should have been managed under either CERCLA or RCRA regulations.

- For the U.S. Navy provided project management and technical oversight to Phase 1 environmental site assessments conducted at three SOUTHDIV Naval bases (located in SC, TN and TX), covering over 1600 facilities. Responsible for managing asbestos, radon and lead paint investigations and one of several that reviewed and approved final reports.

INDOOR AIR QUALITY STUDIES

- Managed a project that evaluated the indoor air quality at all eight public schools within a New England municipality. Determined carbon dioxide levels, carbon monoxide levels, ventilation rates, fresh air intake rate and whether boiler exhaust gasses were being re-entered into the schools. Also, as a result of persistent complaints, two schools required an investigation for microbiological contamination.

- Managed an indoor air quality project that evaluated formaldehyde concentrations at all public housing developments within the city of Seattle, Washington. Responsibilities included: coordination of field staff, scheduling, budgeting, quality control and quality assurance, data analysis and issuance of the final report.

- Mr. Isenberg conducted an indoor air study for a utility company in Canada. This project was unique in that the primary concern was that ink on original mylar drawings was failing, human health issues were not that significant. Teaming with a chemist that specialized in inks, the team determined that ammonia vapors in conjunction with very low relative humidities was the culprit. Laboratory testing confirmed these findings. Process changes and redesigning where the drawing storage area saved the client millions of dollars worth of drawings.

- Mr. Isenberg conducted an indoor air investigation for the United States Navy. Allegedly, toxic vapors had the potential to migrate from a former landfill into almost 100 buildings. Vapors allegedly entered through cracks, utility chases and openings in the concrete floors. After an inspection of all potentially impacted buildings, nine were selected for further evaluation. Mr. Isenberg designed and implemented an investigation strategy using state of the art sampling analytical procedures. The procedures allowed detection of airborne compounds that were present at concentrations of less than 1 part per billion. The results of this survey allowed the department of Defense to demonstrate that their facility was safe for building occupants and that their facility was unaffected by the nearby landfill.

INDUSTRIAL HYGIENE

- Implemented a hazardous material control program for an aerospace company. This included ascertaining the location and use of highly toxic compounds, documenting employee exposures, observing employee work

practices, evaluating potential health risks, and recommending corrective actions.

- For a manufacturing facility with over 50 confined spaces that require periodic entry Mr. Isenberg is presently conducting a confined space entry assessment. This assessment involves identifying permit required confined spaces and establishing entry requirements including: site control, lockout\tagout requirements, fall protection and required rescue equipment, atmospheric testing protocols and personal protective equipment.

ENVIRONMENTAL HYGIENE

- Conducted an environmental survey of a former hospital. Site owners were concerned about residual mercury, radiological, lead and asbestos contamination. Determined the presence and location of these materials and recommended remedial strategies.

- Designed and conducted an air monitoring program at a sanitary landfill. Historically, the landfill was known to have accepted hazardous wastes (before these wastes were regulated). This monitoring program was critical in evaluating potential public health risks posed to nearby residents.

- Conducted an ambient air sampling program at an asphalt storage facility. The facility was located adjacent to a residential neighborhood. Sample results were used for air modeling and public health risk assessments. As a result of having actual data to use in the risk assessment, the potential risks were shown to be acceptable and the facility was able to maintain their permit and ease tension in neighborhood.

ASBESTOS

- Managed a project that required asbestos surveys to be conducted at 10 department stores. Within the client's start to finish three week deadline: hired subcontractors, personally surveyed three sites and authored the final report including site specific asbestos management recommendations and abatement cost estimates.

- Managed an asbestos survey for a state university. This survey required inspecting 160 buildings; determining the quantity, location, and condition of each building material suspected of containing asbestos; developing a

quality assurance and control program; photo-documenting each sample and sample location; and submitting drawings showing the location of all asbestos containing materials and all sample locations.

- Managed an asbestos survey and the abatement of all asbestos-containing materials in the North Hampton, Massachusetts public schools. In accordance with AHERA requirements: conducted a building inspection; developed management plans including abatement options and cost estimates; designed asbestos abatement projects; prepared contract specifications and bid documents; approved abatement contractor's work; collected and analyzed air samples onsite and conducted aggressive air sampling of all work areas prior to allowing re-occupancy.

- Managed an asbestos survey and asbestos abatement projects for the Federal Bureau of Investigation (FBI). For FBI offices located in Seattle, Chicago, Cleveland and Boston conducted an asbestos survey, designed abatement projects, prepared abatement specifications, approved abatement contractor's work and conducted aggressive air sampling of all work areas prior to allowing re-occupancy.

- For the U.S. Army Corps of Engineers provided project management contractor oversight and designed asbestos abatement projects in support of asbestos abatement activities at Fort Devans. Massachusetts.

- For the U.S. Army Corps of Engineers provided project management and subcontractor oversight for a task order contract to provide architect and engineering services for hazardous, toxic and radioactive waste projects at Fort Campbell, Kentucky. Task orders are not to exceed $75,000 nor are billings to exceed $400,00 in a fiscal year (two year contract).

HEALTH AND SAFETY

- Provided safety services and safety awareness training to construction crews providing in disaster relief services in the wake of the 1993 flooding of the Mississippi River. Services provided included electrical safety, construction safety, evaluating confined spaces for toxic, explosive and combustible atmospheres and monitoring worker exposure to toxic gases.

- For the Department of Defense prepared the health and safety program and procedures required to investigate environmental contamination associated with or in close proximity to underground utilities.

Underground utilities present include: high voltage electrical cables; oxygen lines; welding gases (MAPP gas) lines; and sewer, sea water and potable water lines. In addition to a range of chemical contaminants expected project hazards include: confined space entry, oxygen deficient atmospheres, hydrogen sulphide, combustible atmospheres and electrical hazards.

- Prepared Health and Safety Plans and served as Project Health and Safety Officer for a variety of environmental projects. Projects ranged in complexity from superfund sites to military bases to removing underground storage tanks.

WASTE MINIMIZATION\PRODUCT SUBSTITUTION

- Implemented a hazardous material control program for an aerospace company. This included ascertaining the location and use of highly toxic compounds, documenting employee exposures, observing employee work practices, evaluating potential health risks, and recommending corrective actions.

AFFILIATIONS

- Member, 1994 - Present, AIHA Construction Safety Task Force.

- Member, 1993 - Present, AIHA International Affairs Subcommittee on the Americas.

- Member, 1992 - 1994, AIHA Occupational Health Standards Committee.

APPENDIX D

BRAC PROJECT CLEANUP TEAM MEMBERS

TABLE 1-1 CURRENT BCT/PROJECT TEAM MEMBERS

BCT MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
Pat Franklin	BRAC Environmental Coordinator (BEC)	(803) 743-0691 (SOUTHDIV) (803) 743-9985 (BRAC Office) (803) 743-9947 (fax)	SOUTHDIV c/181 NAVBASECHAS c/N4BEC	DOD BCT Member
Bobby Dearhart	BRAC Environmental Coordinator (BEC)	(803) 743-2443 (Shipyard) (803) 743-9985 (BRAC Office) (803) 852-1931 (pager) (803) 743-9947 (fax)	CNSY c/2308 NAVBASECHAS c/N4BEC	DOD BCT Member
Doyle Brittain	Senior Remedial Project Manager (RPM)	Atlanta: (404) 347-3016 (404) 347-5205 (fax) Local: (803) 743-9985 (803) 743-9947 (fax)	EPA Region IV Waste Management Division	Federal BCT Member
Ann Ragan	Federal Facility Liaison	Columbia: (803) 734-4721 (803) 734-5199 (fax) Local: (803) 743-8127	SCDHEC Environmental Quality Control Division	State BCT Member

CURRENT BRAC CLEANUP PROJECT TEAM MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
Steve Beverly	Attorney Advisor	(803) 743-0708	SOUTHDIV c/09CB	Legal Counsel
Pat Cline	Natural Resources	(803) 743-0588	SOUTHDIV c/243	Natural Resources
Thuane Fielding	Environmental Engineer	(803) 743-0513	SOUTHDIV c/1876 Environmental Division	RPM
Daryle Fontenot	Environmental Engineer	(803) 743-0607 (803) 743-0465 (fax)	SOUTHDIV c/1841 Petroleum Division	UST
Tony Hunt	Environmental Engineer	(803) 743-0525	SOUTHDIV c/1877 Environmental Division	RPM
Ron Johnson	Architect	(803) 743-0990	SOUTHDIV c/203RJ Environmental Planning Division	Historical and Cultural Resource Review

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CURRENT BRAC CLEANUP PROJECT TEAM MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
Pano Kordonis	Environmental Engineer	(803) 743-0565 (803) 743-0465 (fax)	NAVBASECHAS c/N34 SOUTHDIV c/1825 Hazardous Waste Division	Hazardous Wastes
Sue Lawley	Public Affairs Officer (PAO)	(803) 743-0771	SOUTHDIV c/OPP Public Affairs Office	Public media assistance
Linda Martin	Environmental Engineer	(803) 743-0574 (803) 743-0465 (fax)	SOUTHDIV c/1802 Operations Division	Contracts
Will Sloger	Planner	(803) 743-0797	SOUTHDIV c/203 Environmental Planning Division	EIS Preparation
Shirley Washington	Realty Specialist	(803) 743-0489	SOUTHDIV c/241 Real Estate Division	Real Estate
LT. Donna Murphy	Public Affairs Officer (PAO)	(803) 743-3940 (803) 743-2545 (fax)	NAVBASECHAS c/06 Base Closure Office	Public media and news releases, community feedback
CAPT J. Augustin	Base Closure Officer (BCO)	(803) 743-9948 (803) 743-9947 (fax)	NAVBASECHAS c/N4 Base Closure Office	RAB Co-Chairman
Rick Davis	Engineer	(803) 743-3604 (803) 743-9947 (fax)	NAVBASECHAS c/N41 Base Closure Office Facilities/Real Estate	Environmental Closure Planning Subcommittee
David Epps	Computerized Project Manager	(803) 743-8127	NAVBASECHAS c/N42 Base Closure Office	Base Closure Office Computer Services
CDR Jim Moore	Base Transition Coordinator (BTC)	(803) 743-9985 (803) 743-9947 (fax)	NAVBASECHAS c/N4BTC Base Closure Office	Community Liaison Federal Agency Liaison
CMDR Crowley	Regional Environmental Coordinator (REC)	(803) 743-2670 (803) 743-2545 (fax)	NAVBASECHAS c/N3 Operations Department	COMNAVBASE
LT Gil Wolfe	Environmental Control Officer (NAVSTA)	(803) 743-5557 (803) 743-2554 (fax)	NAVSTACHAS	Environmental Closure Planning Subcommittee

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CURRENT BRAC CLEANUP PROJECT TEAM MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
Jim Beltz	Public Affairs Officer (PAO)	(803) 743-6233	CNSY c/1160 Congressional and Public Affairs Office	CNSY Media and News Release Coordination
CDR S.V. Bisceglia	Operations Closure Officer	(803) 743-4216	CNSY c/300C CNSY Operations Closure Office	CNSY Closure Operations Coordination
Bill Brasel	Environmental Division Head	(803) 743-5519 (803) 743-6055 (803) 743-1475 (fax)	CNSY c/106.2 Environmental Division	Environmental Compliance Program at CNSY Environmental Closure Planning Subcommittee
Mike Simmons	Radiological Controls Engineering	(803) 743-3130	CNSY c/105.2	CNSY Nuclear Closure and Radiological Control POC
Ned Johnson	Deputy Director Radiological Control	(803) 743-6632	CNSY c/105.1 Radiological Control Office	CNSY Nuclear Closure and Radiological Control POC
Ralph Laney	Occupational Safety, Health and Environmental Office Head	(803) 743-5519 (803) 743-1475 (fax)	CNSY 106 Environmental Remediation Division	Environmental Compliance
Mitch Mascoe	Environmental Engineer	(803) 743-5519 (803) 743-1475 (fax)	CNSY c/106.21 Environmental Controls Division	HW Permit
Michele McCoy	Legal Officer	(803) 743-3178	CNSY c/1130 CNSY Legal Office	CNSY Legal Council
Jim McNeil	Director Radiological Control	(803) 743-3552	CNSY c/105 Radiological Control Office	CNSY Nuclear Closure and Radiological Control POC
Gary Crawford	Environmental Engineer	(803) 743-3452 (803) 743-9581	CNSY c/106.25 Environmental Division	Hazardous Waste
Bill Strickland	Engineering Division Head	(803) 743-4981	CNSY c/440 Public Works Office	Utilities/Maps
Marvin Sturdivant	Environmental Protection Specialist	(803) 743-5519 (803) 743-1475 (fax)	CNSY c/106.2 Environmental Controls Division	SWMUs

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CURRENT BRAC CLEANUP PROJECT TEAM MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
David Walton	Environmental Engineer	(803) 734-4814 (803) 734-5199 (fax)	Division of Hazardous and Infectious Waste Management	Naval Base Charleston Project Manager
Butch Bonner	DRMO, Chief	(803) 743-3008 (803) 743-8040 (fax)	DRMO	Environmental Closure Planning Subcommittee
Bob Veronee	Safety Director	(803) 743-4086 (803) 743-6371 (fax)	FISC c/05	Environmental Closure Planning Subcommittee
John Barnes	Industrial Hygienist	(803) 743-6100 (803) 743-0246 (fax)	NAVHOSPCHAS	Environmental Closure Planning Subcommittee
Barry Lewis	Environmental Engineer	(803) 764-4010 (803) 764-4177 (fax)	NAVWPNSTACHAS c/0442	Environmental Closure Planning Subcommittee
Dr. Elmer Akin	Toxicologist	(404) 347-1586	U.S. EPA Region IV	Risk Assessment
Marion Hopkins	NEPA Specialist	(404) 347-3776	USEPA Region IV	NEPA
Diane Jackson	Chemist	(404) 639-6070		Health Assessment
Pete Raack	Attorney	(404) 347-2641 ext. 2243	USEPA Region IV	Legal Affairs
Carl Terry	Public Affairs Specialist	(404) 347-3004	USEPA Region IV	Public Affairs
Joe Bowers	Hydrogeologist	Columbia: (803) 734-5484 (803) 734-5199 (fax)	SCDHEC Division of Hydrogeology	Hydrogeology
Wayne Fanning	Assistant Director of Trident District EQC	(803) 740-1590 (803) 740-1595 (fax)	SCDHEC Chasn Division Tridant EQC	Contractors Technical Representative
Tim Metten	Hydrogeologist	(803) 734-5328	SCDHEC Division of Groundwater Protection	UST Specialist
Rick Richter	Environmental Quality Manager	(803) 740-1590 (803) 740-1595 (fax)	SCDHEC Chasn Division Trident EQC	Hazardous Waste Consultant

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CURRENT BRAC CLEANUP PROJECT TEAM MEMBERS

Name	Title	Phone	Organization	Role/Responsibility
Bruce Campbell	Water Resources Director	(803) 883-9104	US Geological Survey	
Diane Duncan		(803) 727-4707 (803) 727-4218 (fax)	US Fish and Wildlife Department of Interior	Natural Resource Trustee
Waynon Johnson	Coastal Resources Coordinator	(404) 347-5231	National Oceanic and Atmospheric Administration (NOAA)	Natural Resource Trustee
Jim Lee	Regional Environmental Officer		US Department of Interior	Natural Resource Trustee
Rob Mikell		(803) 744-5847 (803) 744-5838 (fax)	South Carolina Coastal Council (SCCC)	Natural Resource Trustee
Dr. Bob Van Dolah	Assistant Director	(803) 762-5048	SC Wildlife and Marine Resources	Sediment Samples
Jane Settle	Environmental Evaluations	(803) 762-5068 (803) 762-5007 (fax)	SC Wildlife and Marine Resources	Natural Resource Trustee
Madeline McGee	Co-Chairman	(803) 724-0670 (803) 724-0674 (fax)	BEST	BEST Policy Committee
Dave Backus	Clean Contractor Project Manager	Memphis: (901) 372-7962 (901) 372-6023 (fax) Local: (803) 744-4449	EnSafe/Allen & Hoshall	EBS and BCP Preparations
Van Robinson	Businessman	(803) 566-1629	RAB	RAB Co-chairman